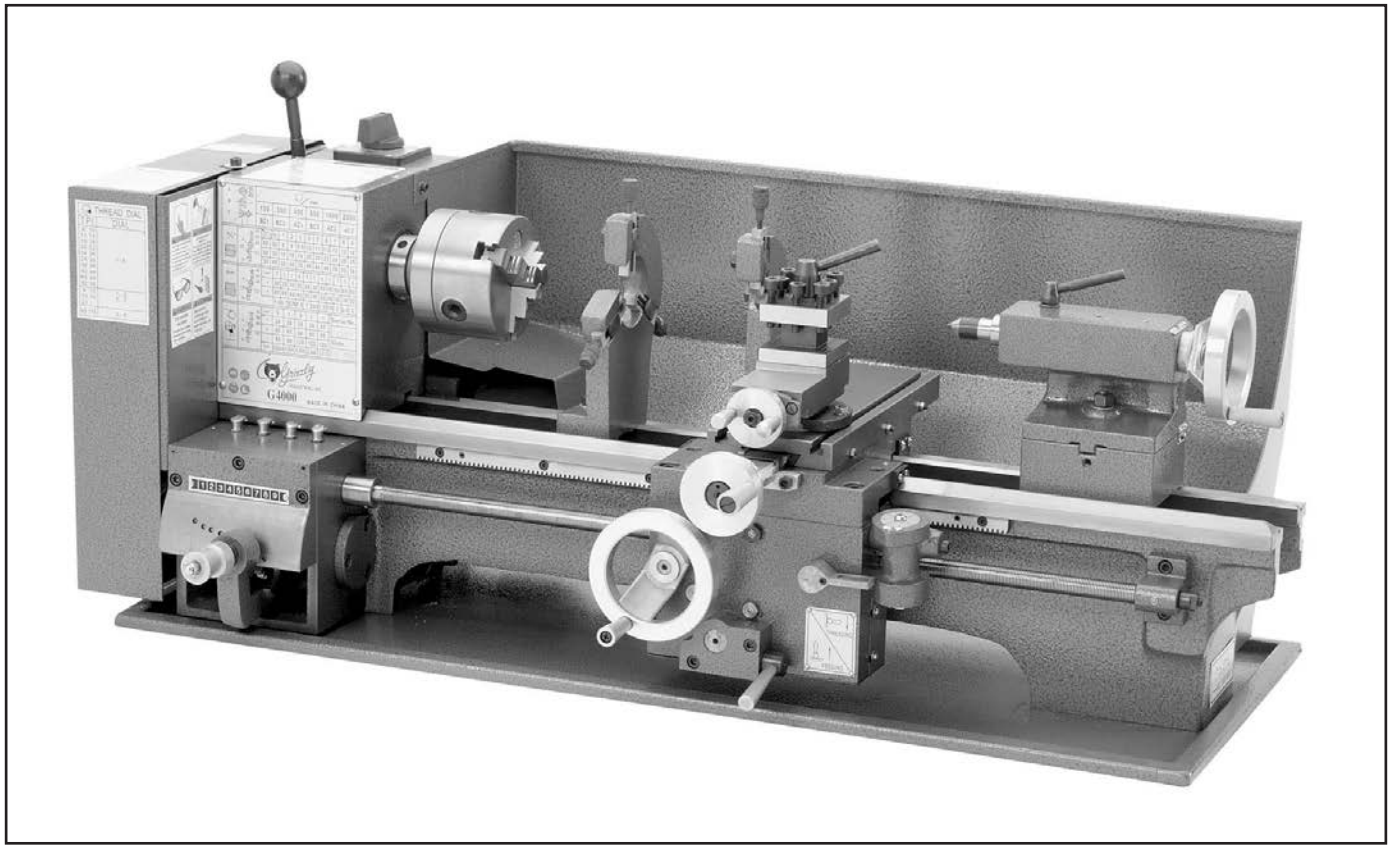
Grizzly Industrial, Inc.®

MODEL G4000
9" X 19" BENCH LATHE
OWNER'S MANUAL



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WARNING: NO PORTION OF THIS MANUAL MAY BE REPRODUCED IN ANY SHAPE OR FORM WITHOUT THE WRITTEN APPROVAL OF GRIZZLY INDUSTRIAL, INC.
(FOR MODELS MANUFACTURED SINCE 8/09) #TS11444 PRINTED IN CHINA

⚠ WARNING!

This manual provides critical safety instructions on the proper setup, operation, maintenance, and service of this machine/tool. Save this document, refer to it often, and use it to instruct other operators.

Failure to read, understand and follow the instructions in this manual may result in fire or serious personal injury—including amputation, electrocution, or death.

The owner of this machine/tool is solely responsible for its safe use. This responsibility includes but is not limited to proper installation in a safe environment, personnel training and usage authorization, proper inspection and maintenance, manual availability and comprehension, application of safety devices, cutting/sanding/grinding tool integrity, and the usage of personal protective equipment.

The manufacturer will not be held liable for injury or property damage from negligence, improper training, machine modifications or misuse.

⚠ WARNING!

Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:

- **Lead from lead-based paints.**
- **Crystalline silica from bricks, cement and other masonry products.**
- **Arsenic and chromium from chemically-treated lumber.**

Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: Work in a well ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles.

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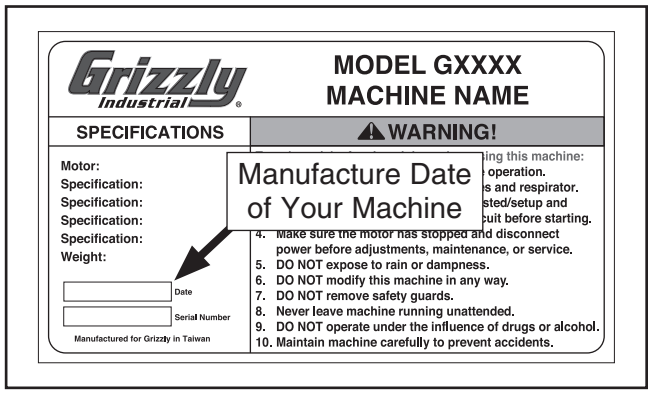
INTRODUCTION

Manual Accuracy

We are proud to offer this manual with your new machine! We've made every effort to be exact with the instructions, specifications, drawings, and photographs of the machine we used when writing this manual. However, sometimes we still make an occasional mistake.

Also, owing to our policy of continuous improvement, **your machine may not exactly match the manual**. If you find this to be the case, and the difference between the manual and machine leaves you in doubt, check our website for the latest manual update or call technical support for help.

Before calling, find the manufacture date of your machine by looking at the date stamped into the machine ID label (see below). This will help us determine if the manual version you received matches the manufacture date of your machine.



For your convenience, we post all available manuals and manual updates for free on our website at **www.grizzly.com**. Any updates to your model of machine will be reflected in these documents as soon as they are complete.

Contact Info

We stand behind our machines. If you have any questions or need help, use the information below to contact us. Before contacting, please get the serial number and manufacture date of your machine. This will help us help you faster.

Grizzly Technical Support
1203 Lycoming Mall Circle
Muncy, PA 17756
Phone: (570) 546-9663
Email: techsupport@grizzly.com

We want your feedback on this manual. What did you like about it? Where could it be improved? Please take a few minutes to give us feedback.

Grizzly Documentation Manager
P.O. Box 2069
Bellingham, WA 98227-2069
Email: manuals@grizzly.com

Machine Description

The metal lathe is used to remove material from a rotating workpiece, which is held in place on the spindle with a chuck or faceplate. The cutting tool is mounted on the carriage or tailstock and moved against the spinning workpiece to perform the cut.

The typical metal lathe cutting operations include facing, turning, parting, drilling, reaming, grooving, knurling, and threading. There are a wide variety of tools and workpiece holding devices available for each of these operations.

The Model G4000 is great lathe for those getting started in metalworking. It has a number of features and capabilities typically only found on higher-end lathes, and it is jam-packed with standard accessories. The compact size allows this lathe to be mounted to an existing workbench or on the optional Model G4001 stand.

Identification

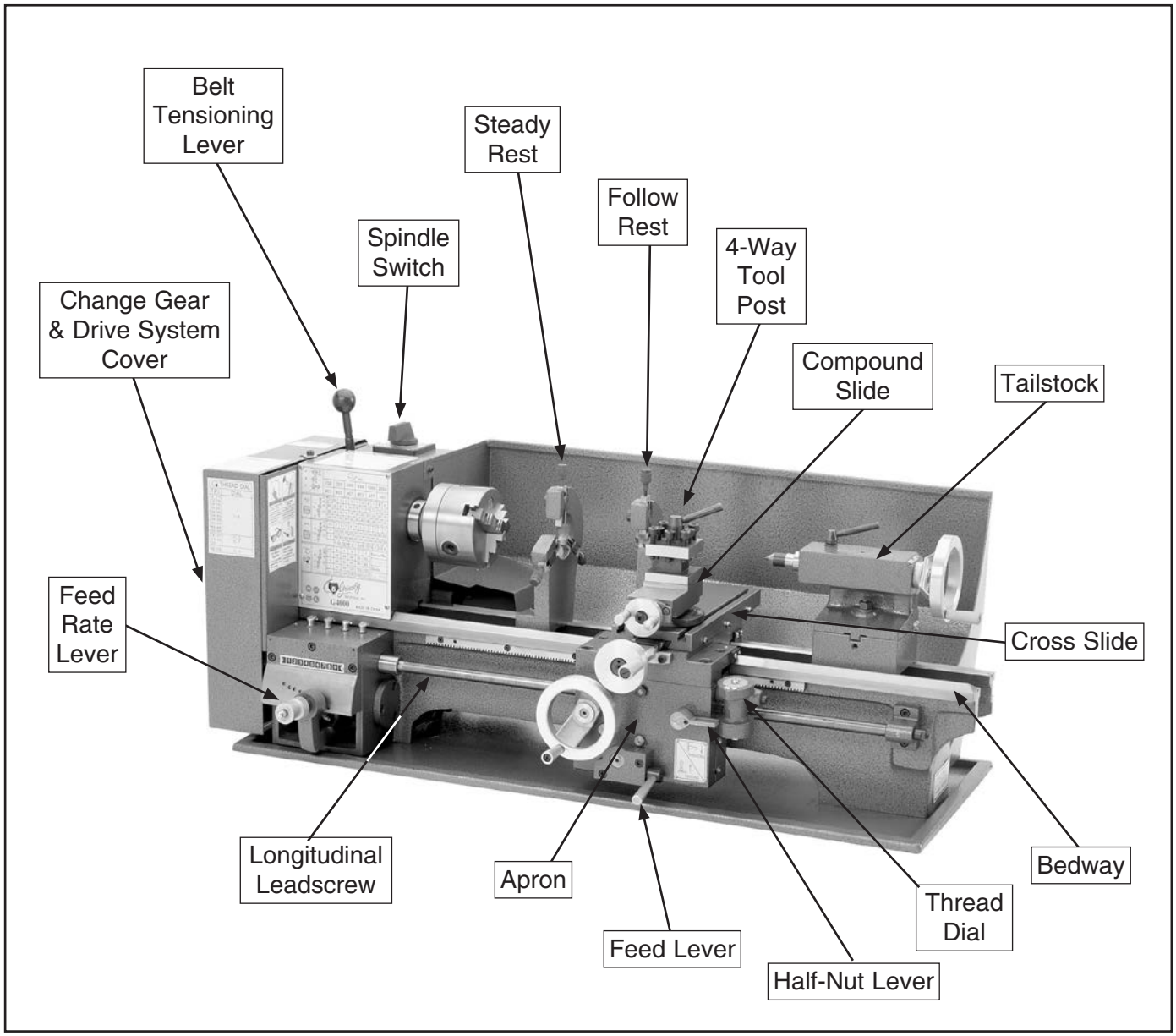


Figure 1. Model G4000 identification.

Note: *For detailed descriptions of basic controls and components, refer to* ***Basic Controls*** *beginning on* ***Page 18****.*

NOTICE

If you have never used this type of machine or equipment before, WE STRONGLY RECOMMEND that you read books, review industry trade magazines, or get formal training before beginning any projects. Regardless of the content in this section, Grizzly Industrial will not be held liable for accidents caused by lack of training.

MACHINE DATA SHEET

Customer Service #: (570) 546-9663 · To Order Call: (800) 523-4777 · Fax #: (800) 438-5901

MODEL G4000 9" X 19" BENCH LATHE

Product Dimensions:

Weight..... 250 lbs.
Width (side-to-side) x Depth (front-to-back) x Height..... 37 x 20 x 15 in.
Footprint (Length x Width)..... 37 x 16 in.

Shipping Dimensions:

Type..... Wood Crate
Content..... Machine
Weight..... 293 lbs.
Length x Width x Height..... 41 x 22 x 20 in.
Must Ship Upright..... Yes

Electrical:

Power Requirement..... 110V, Single-Phase, 60 Hz
Prewired Voltage..... 110V
Full-Load Current Rating..... 11.6A
Minimum Circuit Size..... 15A
Connection Type..... Cord & Plug
Power Cord Included..... Yes
Power Cord Length..... 6 ft.
Power Cord Gauge..... 12 AWG
Plug Included..... Yes
Included Plug Type..... 5-15
Switch Type..... Forward/Reverse Switch

Motors:

Main

Type..... ODP Capacitor-Start Induction
Horsepower..... 3/4 HP
Phase..... Single-Phase
Amps..... 11.6A
Speed..... 1725 RPM
Power Transfer ..... Belt Drive
Bearings..... Shielded & Permanently Lubricated

Main Specifications:

Operation Info

Swing Over Bed..... 8-3/4 in.
Distance Between Centers..... 19 in.
Swing Over Cross Slide..... 5 in.
Swing Over Saddle..... 5 in.
Maximum Tool Bit Size..... 1/2 in.
Compound Travel..... 1-7/8 in.
Carriage Travel..... 16 in.
Cross Slide Travel..... 4-1/4 in.

Headstock Info

Spindle Bore	0.78 in.
Spindle Size	39 mm
Spindle Taper	MT#3
Spindle Threads	4 TPI
Number of Spindle Speeds	6
Spindle Speeds	130 – 2000 RPM
Spindle Type	Threaded
Spindle Bearings	Tapered Roller

Tailstock Info

Tailstock Quill Travel	1-9/16 in.
Tailstock Taper	MT#2
Tailstock Barrel Diameter	1.002 in.

Threading Info

Number of Longitudinal Feeds	18
Range of Longitudinal Feeds	0.0047 – 0.0120 in./rev.
Number of Inch Threads	27
Range of Inch Threads	8 – 56 TPI
Number of Metric Threads	11
Range of Metric Threads	0.5 – 3.0 mm

Dimensions

Bed Width	4-1/2 in.
Carriage Leadscrew Diameter	9/16 in.
Leadscrew TPI	16 TPI
Carriage Leadscrew Length	25 in.
Steady Rest Capacity	1-3/4 in.
Follow Rest Capacity	1-3/4 in.
Faceplate Size	7-1/2 in.

Other

Optional Stand	G4001

Construction

Base	Cast Iron
Headstock	Cast Iron
End Gears	Cast Iron
Bed	Hardened and Precision-Ground Cast Iron
Body	Cast Iron
Paint Type/Finish	Epoxy

Other Specifications:

Country of Origin	China
Warranty	1 Year
Approximate Assembly & Setup Time	1 Hour
Serial Number Location	Bed Back, Right End
ISO 9001 Factory	No
Certified by a Nationally Recognized Testing Laboratory (NRTL)	No

Features:

Chip and Splash Guard Included
Hardened and Ground Cast-Iron Bed
Quick Change Gearbox Offers up to 27 Standard and 11 Metric Threads, from 8 to 56 Threads Per Inch
Threading Dial

SECTION 1: SAFETY

For Your Own Safety, Read Instruction Manual Before Operating This Machine

The purpose of safety symbols is to attract your attention to possible hazardous conditions. This manual uses a series of symbols and signal words intended to convey the level of importance of the safety messages. The progression of symbols is described below. Remember that safety messages by themselves do not eliminate danger and are not a substitute for proper accident prevention measures. Always use common sense and good judgment.

⚠DANGER **Indicates an imminently hazardous situation which, if not avoided, WILL result in death or serious injury.**

⚠WARNING **Indicates a potentially hazardous situation which, if not avoided, COULD result in death or serious injury.**

⚠CAUTION **Indicates a potentially hazardous situation which, if not avoided, MAY result in minor or moderate injury. It may also be used to alert against unsafe practices.**

NOTICE **This symbol is used to alert the user to useful information about proper operation of the machine.**

Safety Instructions for Machinery

⚠WARNING

OWNER'S MANUAL. Read and understand this owner's manual BEFORE using machine.

TRAINED OPERATORS ONLY. Untrained operators have a higher risk of being hurt or killed. Only allow trained/supervised people to use this machine. When machine is not being used, disconnect power, remove switch keys, or lock-out machine to prevent unauthorized use—especially around children. Make workshop kid proof!

DANGEROUS ENVIRONMENTS. Do not use machinery in areas that are wet, cluttered, or have poor lighting. Operating machinery in these areas greatly increases the risk of accidents and injury.

MENTAL ALERTNESS REQUIRED. Full mental alertness is required for safe operation of machinery. Never operate under the influence of drugs or alcohol, when tired, or when distracted.

ELECTRICAL EQUIPMENT INJURY RISKS. You can be shocked, burned, or killed by touching live electrical components or improperly grounded machinery. To reduce this risk, only allow qualified service personnel to do electrical installation or repair work, and always disconnect power before accessing or exposing electrical equipment.

DISCONNECT POWER FIRST. Always disconnect machine from power supply BEFORE making adjustments, changing tooling, or servicing machine. This prevents an injury risk from unintended startup or contact with live electrical components.

EYE PROTECTION. Always wear ANSI-approved safety glasses or a face shield when operating or observing machinery to reduce the risk of eye injury or blindness from flying particles. Everyday eyeglasses are not approved safety glasses.

⚠WARNING

WEARING PROPER APPAREL. Do not wear clothing, apparel or jewelry that can become entangled in moving parts. Always tie back or cover long hair. Wear non-slip footwear to avoid accidental slips, which could cause loss of workpiece control.

HAZARDOUS DUST. Dust created while using machinery may cause cancer, birth defects, or long-term respiratory damage. Be aware of dust hazards associated with each workpiece material, and always wear a NIOSH-approved respirator to reduce your risk.

HEARING PROTECTION. Always wear hearing protection when operating or observing loud machinery. Extended exposure to this noise without hearing protection can cause permanent hearing loss.

REMOVE ADJUSTING TOOLS. Tools left on machinery can become dangerous projectiles upon startup. Never leave chuck keys, wrenches, or any other tools on machine. Always verify removal before starting!

INTENDED USAGE. Only use machine for its intended purpose and never make modifications not approved by Grizzly. Modifying machine or using it differently than intended may result in malfunction or mechanical failure that can lead to serious personal injury or death!

AWKWARD POSITIONS. Keep proper footing and balance at all times when operating machine. Do not overreach! Avoid awkward hand positions that make workpiece control difficult or increase the risk of accidental injury.

CHILDREN & BYSTANDERS. Keep children and bystanders at a safe distance from the work area. Stop using machine if they become a distraction.

GUARDS & COVERS. Guards and covers reduce accidental contact with moving parts or flying debris. Make sure they are properly installed, undamaged, and working correctly.

FORCING MACHINERY. Do not force machine. It will do the job safer and better at the rate for which it was designed.

NEVER STAND ON MACHINE. Serious injury may occur if machine is tipped or if the cutting tool is unintentionally contacted.

STABLE MACHINE. Unexpected movement during operation greatly increases risk of injury or loss of control. Before starting, verify machine is stable and mobile base (if used) is locked.

USE RECOMMENDED ACCESSORIES. Consult this owner's manual or the manufacturer for recommended accessories. Using improper accessories will increase the risk of serious injury.

UNATTENDED OPERATION. To reduce the risk of accidental injury, turn machine ***OFF*** and ensure all moving parts completely stop before walking away. Never leave machine running while unattended.

MAINTAIN WITH CARE. Follow all maintenance instructions and lubrication schedules to keep machine in good working condition. A machine that is improperly maintained could malfunction, leading to serious personal injury or death.

CHECK DAMAGED PARTS. Regularly inspect machine for any condition that may affect safe operation. Immediately repair or replace damaged or mis-adjusted parts before operating machine.

MAINTAIN POWER CORDS. When disconnecting cord-connected machines from power, grab and pull the plug—NOT the cord. Pulling the cord may damage the wires inside. Do not handle cord/plug with wet hands. Avoid cord damage by keeping it away from heated surfaces, high traffic areas, harsh chemicals, and wet/damp locations.

EXPERIENCING DIFFICULTIES. If at any time you experience difficulties performing the intended operation, stop using the machine! Contact our Technical Support at (570) 546-9663.

Additional Safety for Metal Lathes

⚠WARNING

Serious injury or death can occur from getting entangled in, crushed between, or struck by rotating parts on a lathe! Unsecured tools or workpieces that fly loose from rotating objects can also strike nearby operators with deadly force. To minimize the risk of getting hurt or killed, anyone operating this machine MUST completely heed the hazards and warnings below.

CLOTHING, JEWELRY & LONG HAIR. Tie back long hair, remove jewelry, and do not wear loose clothing or gloves. These can easily get caught on rotating parts and pull you into lathe.

ROTATING PARTS. Always keep hands and body at a safe distance from rotating parts—especially those with projecting surfaces. Never hold anything against rotating workpiece, such as emery cloth, that can pull you into lathe.

GUARDING. Guards and covers protect against entanglement or flying objects. Always ensure they are properly installed while machine is running.

ADJUSTMENT TOOLS. Remove all chuck keys, wrenches, and adjustment tools before turning lathe ***ON***. A tool left on the lathe can become a deadly projectile when spindle is started.

SAFE CLEARANCES. Before starting spindle, verify workpiece has adequate clearance by hand-rotating it through its entire range of motion.

NEW SETUPS. Test each new setup by starting spindle rotation at the lowest speed and standing to the side of the lathe until workpiece reaches full speed and you can verify safe rotation.

SPINDLE SPEEDS. Using spindle speeds that are too fast for the workpiece or clamping equipment can cause rotating parts to come loose and strike nearby people with deadly force. Always use slow spindle speeds with large or non-concentric workpieces. Never exceed rated RPM of the chuck.

LONG STOCK SAFETY. Long stock can whip violently if not properly supported. Always support any stock that extends from the chuck/headstock more than three times its own diameter.

CLEARING CHIPS. Metal chips can be razor sharp. Avoid clearing them by hand or with a rag. Use a brush or vacuum instead.

SECURE WORKPIECE. An improperly secured workpiece can fly off spindle with deadly force. Make sure workpiece is properly secured before starting the lathe.

CHUCKS. Chucks can be heavy and difficult to hold. During installation and removal, protect your hands and precision bed ways by using a chuck cradle or piece of plywood over the bed ways. Use lifting equipment, as necessary, for large chucks.

STOPPING SPINDLE. Always allow spindle to completely stop on its own, or use a brake, if provided. Never put hands or another object on a spinning workpiece to make it stop faster.

CRASHING. A serious explosion of metal parts can occur if cutting tool or other lathe component hits rotating chuck or a projecting part of workpiece. Resulting metal fragments can strike nearby people and lathe will be seriously damaged. To reduce risk of crashing, ALWAYS release automatic feeds after use, NEVER leave lathe unattended, and CHECK all clearances before starting lathe.

COOLANT SAFETY. Coolant can become very toxic through prolonged use and aging. To minimize toxicity, change coolant regularly. When using, position nozzle properly to avoid splashing operator or causing a slipping hazard on floor.

TOOL SELECTION. Cutting with incorrect or dull tooling increases risk of injury from broken or dislodged components, or as a result of extra force required for operation. Always use sharp tooling that is right for the job.

SANDING/POLISHING. To reduce risk of entanglement, never wrap emery cloth around rotating workpiece. Instead, use emery cloth with the aid of a tool or backing board.

MEASURING WORKPIECE. To reduce risk of entanglement, never measure rotating workpieces.

SECTION 2: POWER SUPPLY

Availability

Before installing the machine, consider the availability and proximity of the required power supply circuit. If an existing circuit does not meet the requirements for this machine, a new circuit must be installed. To minimize the risk of electrocution, fire, or equipment damage, installation work and electrical wiring must be done by an electrican or qualified service personnel in accordance with all applicable codes and standards.

⚠WARNING

Electrocution, fire, or equipment damage may occur if machine is not correctly grounded and connected to the power supply.

Full-Load Current Rating

The full-load current rating is the amperage a machine draws at 100% of the rated output power. On machines with multiple motors, this is the amperage drawn by the largest motor or sum of all motors and electrical devices that might operate at one time during normal operations.

Full-Load Current Rating at 110V....11.6 Amps

The full-load current is not the maximum amount of amps that the machine will draw. If the machine is overloaded, it will draw additional amps beyond the full-load rating.

If the machine is overloaded for a sufficient length of time, damage, overheating, or fire may result—especially if connected to an undersized circuit. To reduce the risk of these hazards, avoid overloading the machine during operation and make sure it is connected to a power supply circuit that meets the specified circuit requirements.

⚠WARNING

Serious injury could occur if you connect machine to power before completing setup process. DO NOT connect to power until instructed later in this manual.

110V Circuit Requirements

This machine is prewired to operate on a power supply circuit that has a verified ground and meets the following requirements:

Nominal Voltage 110V, 115V, 120V
Cycle ..... 60 Hz
Phase ..... Single-Phase
Power Supply Circuit ..... 15 Amps

A power supply circuit includes all electrical equipment between the breaker box or fuse panel in the building and the machine. The power supply circuit used for this machine must be sized to safely handle the full-load current drawn from the machine for an extended period of time. (If this machine is connected to a circuit protected by fuses, use a time delay fuse marked D.)

⚠CAUTION

For your own safety and protection of property, consult an electrician if you are unsure about wiring practices or electrical codes in your area.

Note: *Circuit requirements in this manual apply to a dedicated circuit—where only one machine will be running on the circuit at a time. If machine will be connected to a shared circuit where multiple machines may be running at the same time, consult an electrician or qualified service personnel to ensure circuit is properly sized for safe operation.*

Grounding & Plug Requirements

This machine MUST be grounded. In the event of certain malfunctions or breakdowns, grounding reduces the risk of electric shock by providing a path of least resistance for electric current.

This machine is equipped with a power cord that has an equipment-grounding wire and a grounding plug. Only insert plug into a matching receptacle (outlet) that is properly installed and grounded in accordance with all local codes and ordinances. DO NOT modify the provided plug!

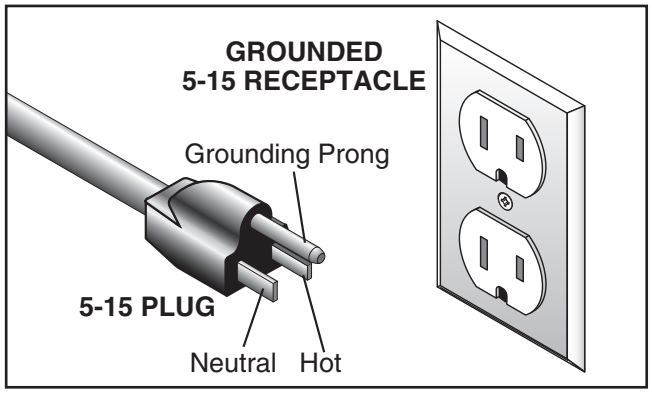
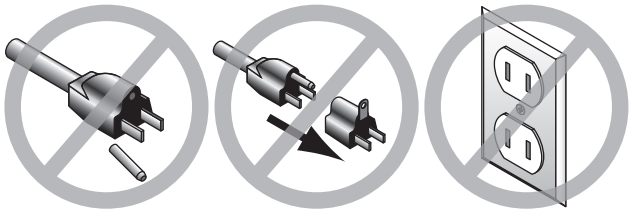


Figure 2. Typical 5-15 plug and receptacle.

⚠CAUTION



SHOCK HAZARD!

Two-prong outlets do not meet the grounding requirements for this machine. Do not modify or use an adapter on the plug provided—if it will not fit the outlet, have a qualified electrician install the proper outlet with a verified ground.

Improper connection of the equipment-grounding wire can result in a risk of electric shock. The wire with green insulation (with or without yellow stripes) is the equipment-grounding wire. If repair or replacement of the power cord or plug is necessary, do not connect the equipment-grounding wire to a live (current carrying) terminal.

Check with a qualified electrician or service personnel if you do not understand these grounding requirements, or if you are in doubt about whether the tool is properly grounded. If you ever notice that a cord or plug is damaged or worn, disconnect it from power, and immediately replace it with a new one.

Extension Cords

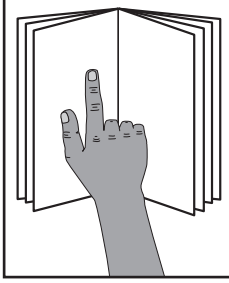
We do not recommend using an extension cord with this machine. If you must use an extension cord, only use it if absolutely necessary and only on a temporary basis.

Extension cords cause voltage drop, which can damage electrical components and shorten motor life. Voltage drop increases as the extension cord size gets longer and the gauge size gets smaller (higher gauge numbers indicate smaller sizes).

Any extension cord used with this machine must be in good condition and contain a ground wire and matching plug/receptacle. Additionally, it must meet the following size requirements:

Minimum Gauge Size .....14 AWG
Maximum Length (Shorter is Better).....50 ft.

SECTION 3: SETUP

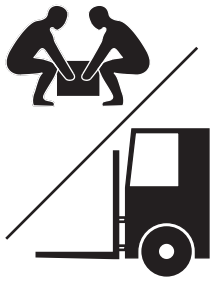


⚠WARNING

This machine presents serious injury hazards to untrained users. Read through this entire manual to become familiar with the controls and operations before starting the machine!

⚠WARNING

Wear safety glasses during the entire setup process!



⚠WARNING

HEAVY LIFT!

Straining or crushing injury may occur from improperly lifting machine or some of its parts. To reduce this risk, get help from other people and use a forklift (or other lifting equipment) rated for weight of this machine.

Needed for Setup

The following are needed to complete the setup process, but are not included with your machine:

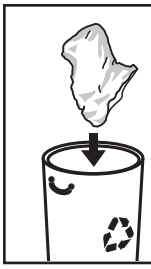
Description	Qty
• Wrenches 13, 16mm	1 Each
• Precision Level	1
• Assistants	As Needed
• Safety Glasses	1 Per Person
• Lifting Straps	2
• Hoist or Forklift	1
• Shop Rags	As Needed
• Cleaner/Degreaser	As Needed
• Mounting Hardware (**Page 15**)	As Needed
• Tools for Mounting	As Needed

Unpacking

Your machine was carefully packaged for safe transportation. Remove the packaging materials from around your machine and inspect it. If you discover the machine is damaged, *please immediately call us at (570) 546-9663 for advice.*

Save the containers and all packing materials for possible inspection by the carrier or its agent. *Otherwise, filing a freight claim can be difficult.*

When you are completely satisfied with the condition of your shipment, inventory the contents.



⚠WARNING

SUFFOCATION HAZARD!

Keep children and pets away from plastic bags or packing materials shipped with this machine. Discard immediately.

Inventory

The following is a list of items shipped with your machine. Before beginning setup, lay these items out and inventory them.

If any non-proprietary parts are missing (e.g. a nut or a washer), we will gladly replace them; or for the sake of expediency, replacements can be obtained at your local hardware store.

Inventory: (Figures 3–4)	Qty
A. Faceplate 7½"	1
B. 4-Jaw Chuck 7¼"	1
C. 3-Jaw Chuck 4"	1
D. Reverse Jaws for 3-Jaw Chuck	1 Set
E. C-Type Tool Holder	1
F. Dead Center MT#2	1
G. Dead Center MT#3	1
H. Live Center MT#2	1
I. Change Gears:	
—30T Gears	2
—36T Gear	1
—42T Gear	1
—45T Gear	1
—80T Gears	2
J. Tool Box	1
K. Standard & Phillips Screwdrivers	1 Each
L. Combo Wrenches 8/10, 12/14mm	1 Each
M. Hex Wrenches 1.5, 2, 4, 5, 6mm	1 Each
N. Oil Bottle	1
O. Belt Tension Lever Knob	1
P. Chuck Bars	2
Q. 3-Jaw Chuck Key	1
R. 4-Jaw Chuck Key	1
S. Hardware (Not Shown):	
—Hex Bolts M10-1.5 x 30	2
—Hex Bolt M8-1.25 x 30 (C-Type Holder)	1
—Hex Nuts M8-1.25 (C-Type Holder)	1
—Pin 8 x 20mm (C-Type Holder)	1
—Phillips Head Screws M8-1.25 x 16	4
—Hex Nuts M8-1.25	3
—High Hex Nut M8-1.25	1
—Flat Washers 8mm	9
—Compression Spring 10 x 40mm	1

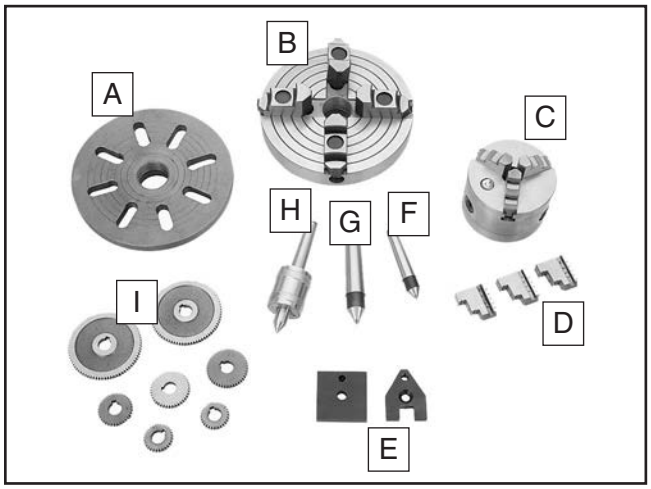


Figure 3. Model G4000 inventory 1.

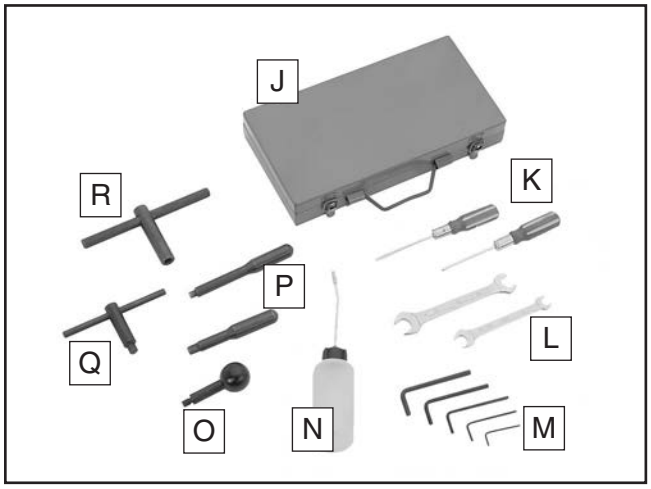


Figure 4. Model G4000 inventory 2.

NOTICE

If you cannot find an item on this list, carefully check around/inside the machine and packaging materials. Often, these items get lost in packaging materials while unpacking or they are pre-installed at the factory.

Cleanup

The unpainted surfaces of your machine are coated with a heavy-duty rust preventative that prevents corrosion during shipment and storage. This rust preventative works extremely well, but it will take a little time to clean.

Be patient and do a thorough job cleaning your machine. The time you spend doing this now will give you a better appreciation for the proper care of your machine's unpainted surfaces.

There are many ways to remove this rust preventative, but the following steps work well in a wide variety of situations. Always follow the manufacturer's instructions with any cleaning product you use and make sure you work in a well-ventilated area to minimize exposure to toxic fumes.

Before cleaning, gather the following:

- Disposable Rags
- Cleaner/degreaser (WD•40 works well)
- Safety glasses & disposable gloves
- Plastic paint scraper (optional)

Basic steps for removing rust preventative:

1. Put on safety glasses.

2. Coat the rust preventative with a liberal amount of cleaner/degreaser, then let it soak for 5–10 minutes.

3. Wipe off the surfaces. If your cleaner/degreaser is effective, the rust preventative will wipe off easily. If you have a plastic paint scraper, scrape off as much as you can first, then wipe off the rest with the rag.

4. Repeat **Steps 2–3** as necessary until clean, then coat all unpainted surfaces with a quality metal protectant to prevent rust.

Site Considerations

Workbench Load

Refer to the **Machine Data Sheet** for the weight and footprint specifications of your machine. Some workbenches may require additional reinforcement to support both the machine and materials.

Placement Location

Consider existing and anticipated needs, size of material to be processed through each machine, and space for auxiliary stands, work tables or other machinery when establishing a location for your new machine. See **Figure 5** for the minimum working clearances.

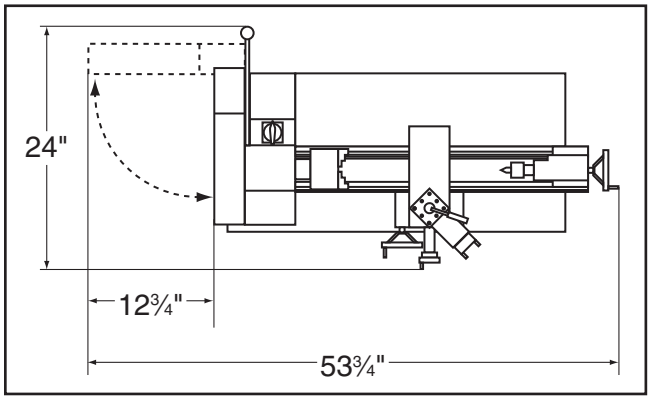
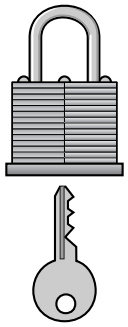


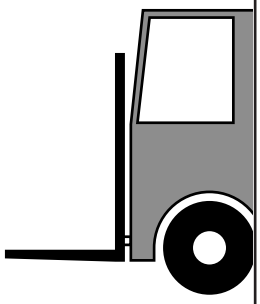
Figure 5. Minimum working clearances.



⚠CAUTION

Children and visitors may be seriously injured if unsupervised around this machine. Lock entrances to the shop or disable start switch or power connection to prevent unsupervised use.

Moving & Placing Lathe



⚠WARNING

The Model G4000 is a heavy machine. Serious personal injury may occur if safe moving methods are not used. To be safe, get assistance, use safe lifting methods, and use power equipment that is rated for at least 500 lbs. to move the shipping crate and machine.

To ensure the lathe does not unexpectedly move during operation, you must securely mount the machine to a flat and stable surface that can support the weight. To do this, use the chip pan as a template to drill the holes (refer to **Mounting** on **Page 15**).

To move and place your lathe:

1. Remove the crate top, then remove the chip pan that is attached to it.

2. Remove the sides of the crate, the toolbox, and the faceplate/4-jaw chuck assembly from the shipping pallet, then unbolt the lathe from the pallet.

3. Position the chip pan on the prepared surface, use it as a template to mark the mounting hole locations, then drill the holes.

4. Wrap the lifting straps around the back of the bedway and up through the center cavities to avoid bending the leadscrew or contacting the carriage controls when lifting, as shown in **Figure 6**.

   Note: *To help balance the load, remove the tailstock and steady rest from the machine, then position the right lifting strap and the carriage as far to the right as possible (refer **Carriage Controls** on **Page 19** for detailed instructions).*

   Make sure the lifting straps do not put any strain on the leadscrew or carriage controls.

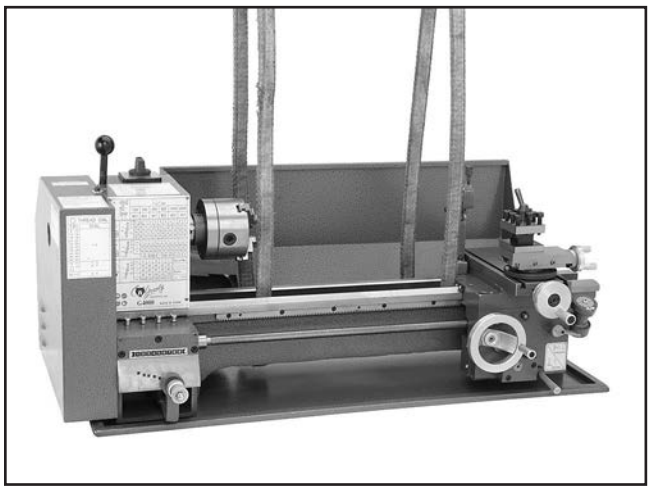


Figure 6. Lifting straps properly positioned.

5. Attach the lifting straps to the power lifting equipment, have an assistant steady the load, then lift it just enough to clear any obstacles and move it to its mounting position.

6. Properly mount the lathe as instructed in the **Mounting** subsection on **Page 15**.

Mounting

The chip pan and the base of the lathe have holes that allow the machine to be mounted to a workbench. You MUST mount your machine to a workbench to prevent it from unexpectedly moving during operation, which could lead to personal injury or property damage.

Follow these guidelines when mounting your lathe to ensure safe and accurate cutting results:

- Make sure that the workbench can adequately support the weight of the machine and materials and that it will not move or vibrate during operation.

- Use ½" bolts, which is the largest diameter fastener that the holes in the lathe and chip pan will accommodate. When using hex nuts, apply thread-locking fluid to ensure they do not come loose.

- Use a quality silicone sealant between the lathe and the chip pan to prevent coolant and other fluids leaking through onto the workbench or floor.

- To ensure accurate results from your lathe, use a precision level to make the lathe bedway exactly level from side-to-side and front-to-back. If necessary, use shims between the lathe and chip pan.

  Note: *Re-check the bedway after 24 hours, after two weeks, then annually to make sure it remains level.*

⚠WARNING

Unexpected movement of the lathe during operation could draw the operator's hands or body into the moving parts of the machine. Make sure this machine is properly secured to a stable workbench or stand before connecting it to power.

The strongest of the two mounting methods illustrated in this section is the "Through Mount" method. In this method, holes are drilled all the way through the workbench, and hex bolts, washers, and hex nuts are used to secure the lathe and chip pan to the workbench, as illustrated in **Figure 7**.

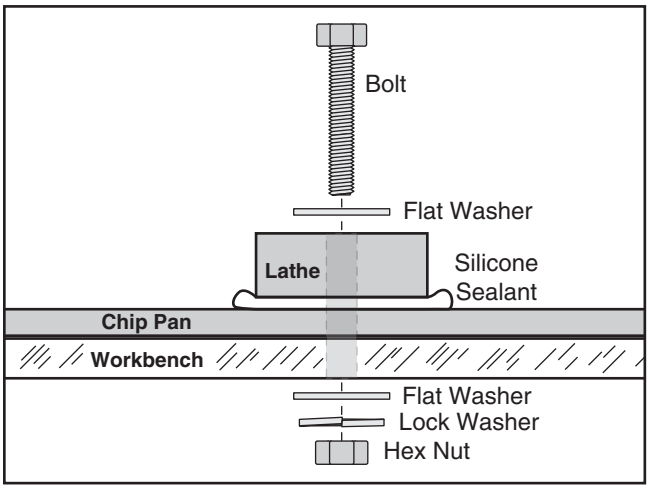


Figure 7. Example of a through mount setup.

Another option for mounting is a "Direct Mount" where the machine is simply secured to the workbench with a lag screw, as illustrated in **Figure 8**.

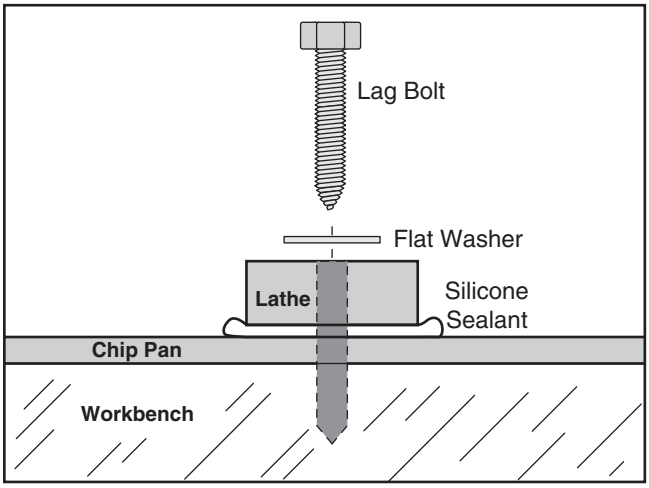


Figure 8. Example of a direct mount setup.

Belt Tensioning Lever Knob

Thread the knob onto the belt tensioning lever, as shown in **Figure 9**.

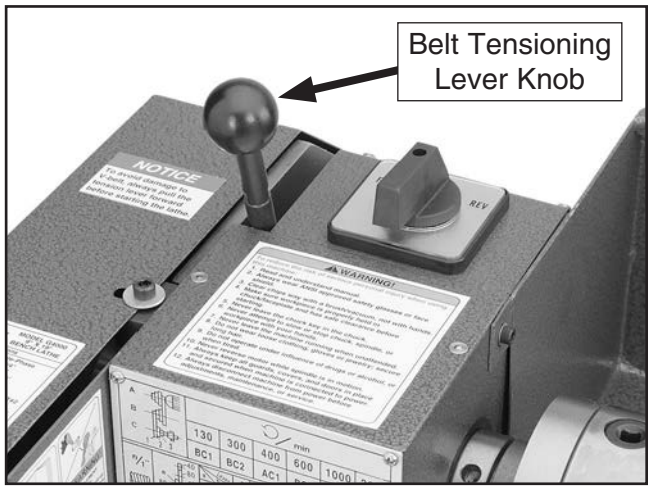


Figure 9. Belt tensioning lever knob.

Test Run

Test run your machine to make sure it runs properly.

If, during the test run, you cannot easily locate the source of an unusual noise or vibration, stop using the machine immediately, then review the **Troubleshooting** on **Page 50**.

If you still cannot remedy a problem, contact our Tech Support at (570) 546-9663 for assistance.

To test run the machine:

1. Make sure you have read the safety instructions at the beginning of the manual and that the machine is set up properly.

2. Your lathe must be fully lubricated before you start it for the first time. Perform all lubrication procedures as instructed in the **Lubrication** subsection on **Page 47**.

3. Make sure all tools and objects used during setup are cleared away from the machine.

4. If a chuck is mounted, make sure it is firmly secured to the spindle and that it can rotate without any interference (refer to **Chuck/ Faceplate Mounting & Removal** on **Page 20** for detailed instructions).

5. Make sure the feed lever on the front of the carriage is in the disengaged (down) position and the half-nut lever is in the disengaged (up) position, as shown in **Figure 10**.

   Note: *With the feed and half-nut levers in these positions, the carriage will not move when the lathe is turned **ON** and the leadscrew rotates.*

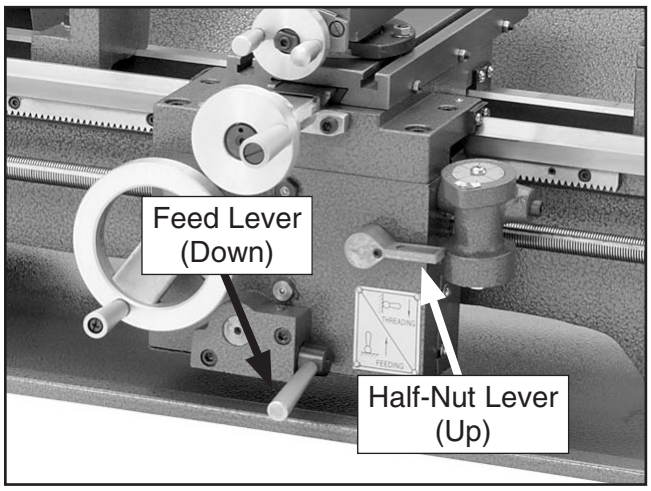


Figure 10. The feed and half-nut levers in the disengaged positions.

6. Make sure the spindle switch on the top of the headstock is in the STOP position, then connect the machine to power.

7. Turn the spindle switch to the FWD position, then listen to and watch for abnormal noises or actions. The machine should run smoothly with little or no vibration or rubbing noises.

   —Strange or unusual noises should be investigated and corrected before operating the machine further. Always disconnect the machine from power when investigating or correcting potential problems.

8. Make sure the chuck or spindle is rotating in a counterclockwise direction (the top of the chuck or spindle should be moving toward the operator).

   —If the chuck or spindle is not rotating in a counterclockwise direction, move the spindle switch to the STOP position, disconnect the machine from power, then check the motor and spindle switch wiring (refer to the **Wiring Diagram** on **Page 55**). If you still cannot remedy the problem, contact our Tech Support at (570) 546-9663 for assistance.

9. Turn the lathe ***OFF*** by moving the spindle switch to the STOP position.

Spindle Bearing Break-In

NOTICE

Successfully complete all of the spindle bearing break-in steps to avoid rapid deterioration of the spindle bearings and other related parts.

To perform the spindle bearing break-in:

1. DISCONNECT LATHE FROM POWER!

2. Make sure that you have successfully completed all of the **Test Run** steps in the previous procedure.

3. Configure the spindle belt for 120 RPM (refer to **Spindle Speed** on **Page 32** for detailed instructions).

4. Connect the lathe to power, turn the spindle switch to the FWD position, then let the lathe run for 10 minutes.

5. Turn the spindle switch to the STOP position and wait for the spindle to come to a complete stop, then turn the switch to the REV position and let the lathe run for another 10 minutes.

6. Turn the spindle switch to the STOP position and wait for the spindle to come to a complete stop.

7. Disconnect the lathe from power, then repeat **Steps 4–6** for the spindle speeds of 600 RPM and 2000 RPM.

8. Turn the lathe ***OFF***.

9. Perform all lubrication procedures as instructed in the **Lubrication** subsection on **Page 47**.

   The **Spindle Bearing Break-In** procedure is complete and your lathe is ready for operation.

Recommended Adjustments

For your convenience, the adjustments listed below have been performed at the factory.

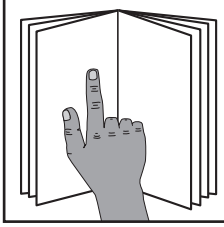
However, because of the many variables involved with shipping, we recommend that you at least verify the following adjustments to ensure the best possible results from your new machine.

Step-by-step instructions for these adjustments can be found in the **SERVICE** section starting on **Page 50**.

Factory adjustments that should be verified:

- Tailstock alignment (**Page 27**).
- Gib adjustment (**Page 52**).

SECTION 4: OPERATIONS

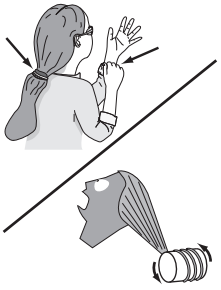


⚠WARNING

To reduce your risk of serious injury, read this entire manual BEFORE using machine.

⚠WARNING

Eye injuries, respiratory problems, or hearing loss can occur while operating this tool. Wear personal protective equipment to reduce your risk from these hazards.



⚠WARNING

Keep hair, clothing, and jewelry away from moving parts at all times. Entanglement can result in death, amputation, or severe crushing injuries!

NOTICE

If you are not experienced with this type of machine, WE STRONGLY RECOMMEND that you seek additional training outside of this manual. Read books/magazines or get formal training before beginning any projects. Regardless of the content in this section, Grizzly Industrial will not be held liable for accidents caused by lack of training.

Basic Controls

Refer to **Figures 11–13** and the following descriptions to become familiar with the basic controls and components of your lathe.

Headstock

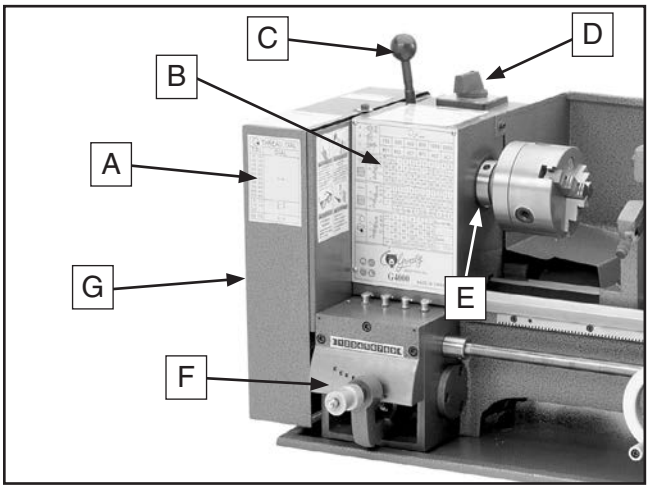


Figure 11. Headstock controls and components.

A. Thread Dial Chart: Shows when to engage the half-nut for inch threading.

B. Configuration Chart: Provides belt, gear, and lever positions for spindle speeds, power feed rates, and threading operations.

C. Belt Tensioning Lever: Releases or applies tension to the spindle belt.

D. Spindle Switch: Starts, reverses, and stops spindle rotation.

E. Spindle: Holds a chuck, faceplate or center for workpiece mounting.

F. Feed Rate Lever: Engages the gearing that partly control the carriage feed rate.

G. Change Gear Cover: Protects the operator from the change gears, belts, and pulleys that transfer power from the motor to the spindle and leadscrew.

Carriage

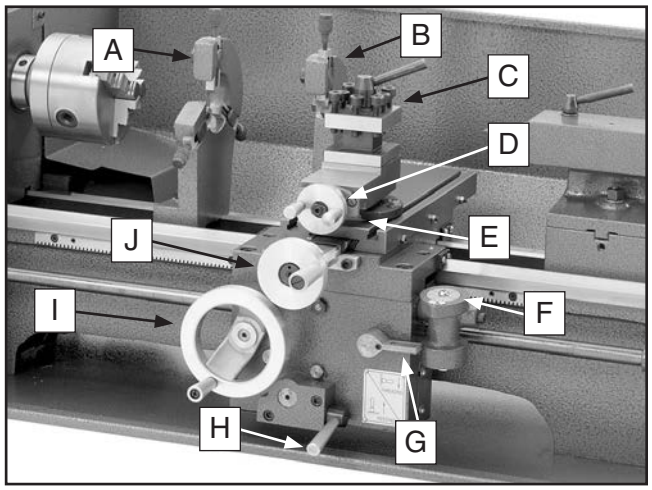


Figure 12. Carriage controls and components.

A. Steady Rest: Provides support for long, slender stock and can be positioned anywhere on the bedway.

B. Follow Rest: Follows the movement of the carriage and provides support for long, slender stock to prevent the workpiece from flexing due to cutting tool pressure.

C. 4-Way Tool Post: Holds four different cutting tools that can be indexed (rotated) to the workpiece as needed.

D. Compound Slide Handwheel: Moves the compound slide and mounted tooling toward or away from the workpiece at the angle selected.

E. Compound Slide Angle Scale: Displays the angle of the compound slide and mounted tooling in relation to the spindle center line.

F. Thread Dial: When engaged with the leadscrew, shows when to engage the half-nut during certain inch threading operations.

G. Half-Nut Lever: Opens and closes the half-nut onto the longitudinal leadscrew, which engages the powered carriage feed for threading.

H. Feed Lever: Engages the carriage gears with the longitudinal leadscrew for non-threading powered carriage movement.

NOTICE

Engaging the feed lever and the half-nut at the same time will damage the carriage gearing and longitudinal leadscrew. NEVER attempt to force the feed lever in the engaged (up) position and half-nut lever in the engaged (down) position at the same time.

I. Carriage Handwheel: Moves the carriage and the mounted tooling left-or-right along the bedway.

J. Cross Slide Handwheel: Moves the cross slide and mounted tooling in-or-out to the bedway.

Tailstock

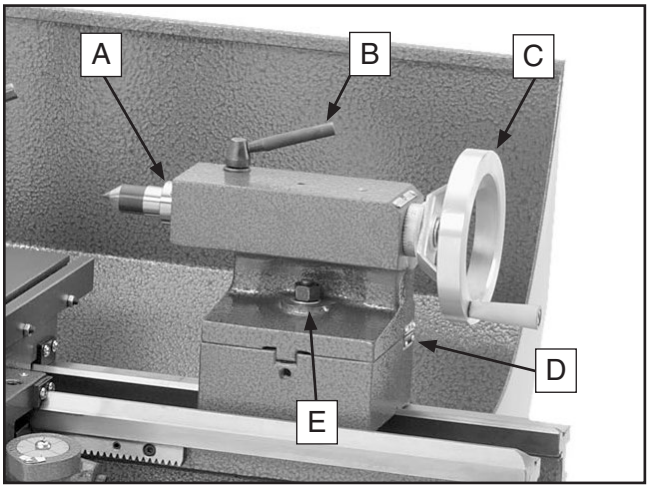


Figure 13. Tailstock controls and components.

A. Quill: Holds a tapered center or tool, and moves toward or away from the spindle with the use of the handwheel.

B. Quill Lock: Locks the quill and installed tool in place.

C. Quill Handwheel: Moves the quill in and out of the tailstock casting.

D. Offset Scale: Indicates the tailstock offset from the lathe center line.

E. Tailstock Lock Nut: Secures the tailstock in place on the bedway.

Chuck/Faceplate Mounting & Removal

Your Model G4000 lathe includes a 4" 3-jaw chuck, a 7¼" 4-jaw chuck, and a 7½" faceplate. The chucks and faceplate mount to the threaded spindle in the same manner.

Before installing or storing the chucks or faceplate, clean away debris and grime from their surfaces and threaded bores, then apply a protective coat of a product like Primrose Armor Plate to avoid rust and corrosion (see **ACCESSORIES** on **Page 43**).

Tools Needed	**Qty**
Hex Wrench 3mm	1
Chuck Bars	2
Plywood ¾" (for bedway)	1

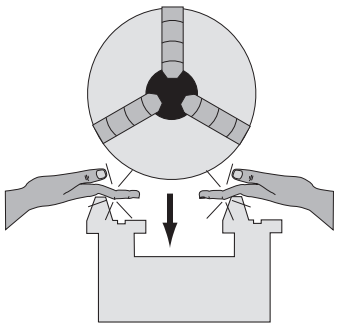
Mounting a Chuck or Faceplate

1. DISCONNECT LATHE FROM POWER!

2. Lay a piece of plywood on the bedway underneath the spindle to protect the precision ground surfaces.

3. Clean away any debris and grime from the mating threads of the spindle and chuck or faceplate, then apply a thin coat of light machine oil to the threads.

⚠WARNING



PINCH HAZARD! Protect your hands and the precision ground bedways with plywood when removing the lathe chuck! The heavy weight of a falling chuck can cause serious injury or damage the bedway.

4. Insert the longer chuck removal bar into the spindle indent to hold the spindle still, then thread the chuck or faceplate onto the spindle and hand-tighten it, as shown in **Figure 14**.

   Note: *Overtightening the chuck or faceplate onto the spindle will make removal difficult and could damage the threads.*

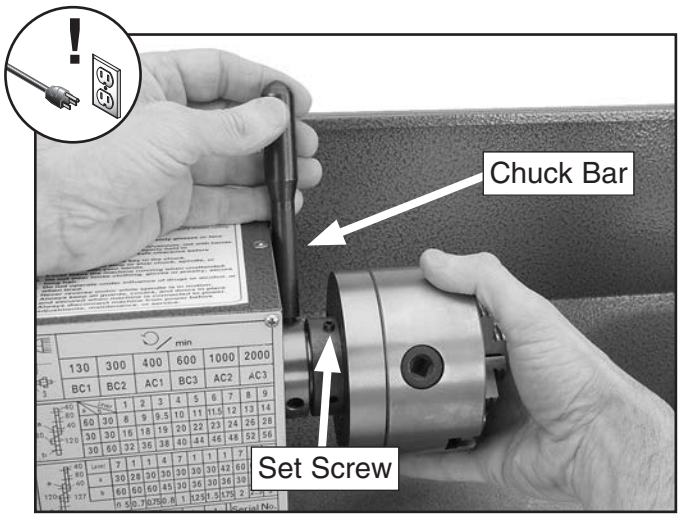
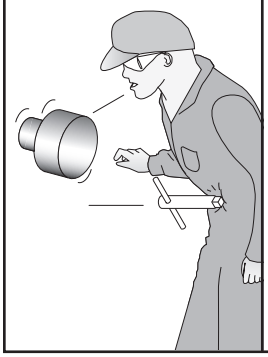


Figure 14. Mounting the 3-jaw chuck.

5. Tighten the set screw shown in **Figure 14** to prevent the chuck or faceplate from coming loose when the spindle is rotating in reverse.

6. Remove the plywood from the bedway and any tools used before starting the lathe.



⚠WARNING

Make sure the chuck/faceplate is firmly secured on the spindle and remove the chuck tools before operation. Objects thrown from the lathe could cause serious personal injury or death to the operator or bystanders.

Removing a Chuck or Faceplate

1. DISCONNECT LATHE FROM POWER!

2. Lay a piece of plywood on the bedway underneath the spindle to protect the precision ground surfaces.

3. Loosen both set screws, then insert one chuck bar into the spindle indent to hold the spindle still (see **Figure 15**).

   Note: *If removing a chuck, insert the remaining chuck bar into a scroll keyway, as shown in **Figure 15**.*

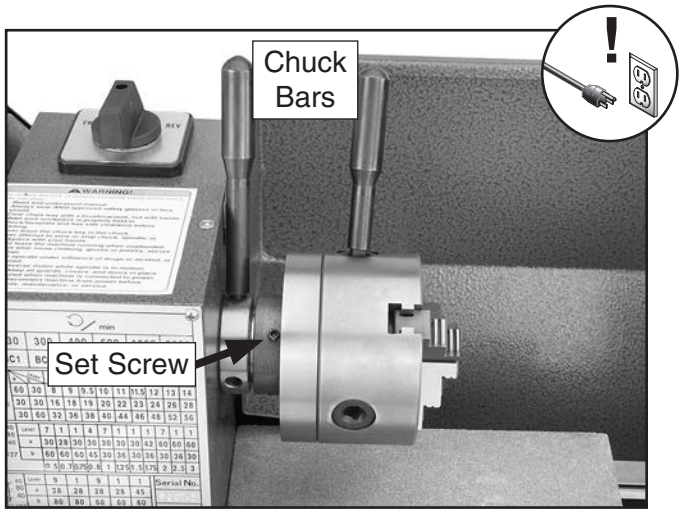


Figure 15. Chuck bar positioning.

4. Rotate the chuck or faceplate counterclockwise to unthread it from the spindle, then thoroughly clean and lubricate it.

⚠CAUTION

No list of safety guidelines can be complete. Every shop environment is different. Always consider safety first, as it applies to your individual working conditions. Use this and other machinery with caution and respect. Failure to do so could result in serious personal injury, damage to equipment, or poor work results.

3-Jaw Chuck

The 3-jaw chuck included with your lathe is a scrolling-type chuck, which means all three jaws move equally when the chuck key is turned. This jaw configuration is used to hold concentric workpieces that are centered with equal pressure from all three jaws.

There is also a reverse set of jaws included with your lathe that accommodate additional workpiece configurations (see **Figure 16** for examples). Both sets of jaws can hold a workpiece on the inside or outside surface of the jaw. No matter how you configure the jaws, make sure the workpiece is firmly secured to the chuck.

Mount or remove the 3-jaw chuck on the spindle, according the instructions beginning on **Page 20**.

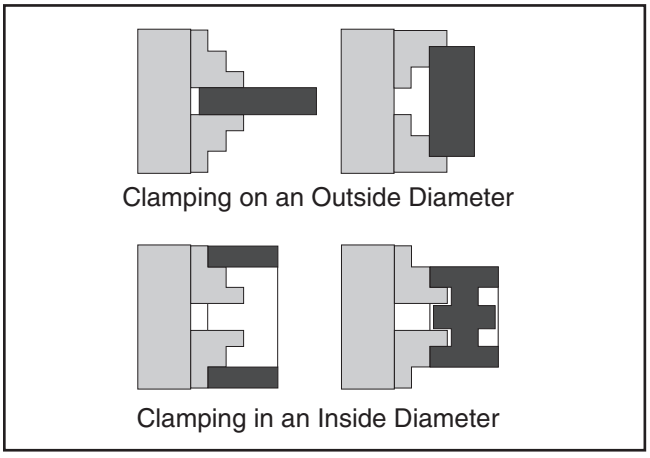


Figure 16. Examples of workpiece holding configurations.

Tools Needed	**Qty**
3-Jaw Chuck Key	1

Mounting Workpiece

1. DISCONNECT LATHE FROM POWER!

2. Lay a piece of plywood on the bedway underneath the spindle to protect the precision ground surfaces.

3. Insert the chuck key into a scroll keyway and rotate it counterclockwise to open the jaws until the workpiece sits flat against the chuck face, evenly on the jaw steps, or fits into the chuck hole and through the spindle bore.

4. Close the jaws until they make light contact with the workpiece, as shown in **Figure 17**.

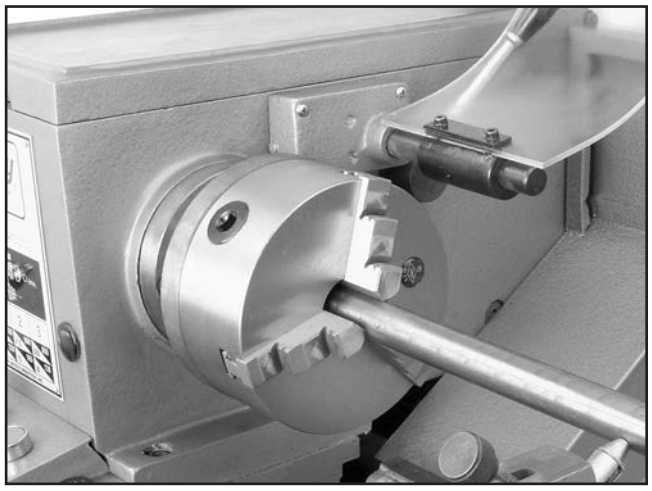


Figure 17. Example of a concentric shaft secured in the 3-jaw chuck.

5. Turn the chuck by hand to make sure the workpiece is evenly held by all three jaws and is centered on the chuck.

   —If the workpiece is not centered, loosen the jaws and adjust the workpiece, then re-tighten the jaws and repeat **Step 5**.

   —If the workpiece is centered, fully tighten the jaws.

Removing Jaws

1. DISCONNECT LATHE FROM POWER!

2. Place a piece of plywood on the bedway to protect it, then remove the chuck from the lathe.

3. Lay the chuck on a flat, stable surface, then insert the chuck key into a scroll keyway and rotate it counterclockwise to back the jaws all the way out of the jaw guides.

4. Thoroughly clean the jaws with shop rags and mineral spirits, then apply a thin coat of an anti-rust protective lubricant before storing them in a protected location free from moisture and abrasives.

Installing Jaws

1. Place the chuck on a flat, stable surface.

2. Examine the sides of the jaws—each is stamped with a number 1 through 3. Examine the jaw guides of the chuck—each is stamped with a corresponding number (see **Figure 18**)

   Note: *The jaws and jaw guides are machined to match and each jaw must be installed in its corresponding jaw guide.*

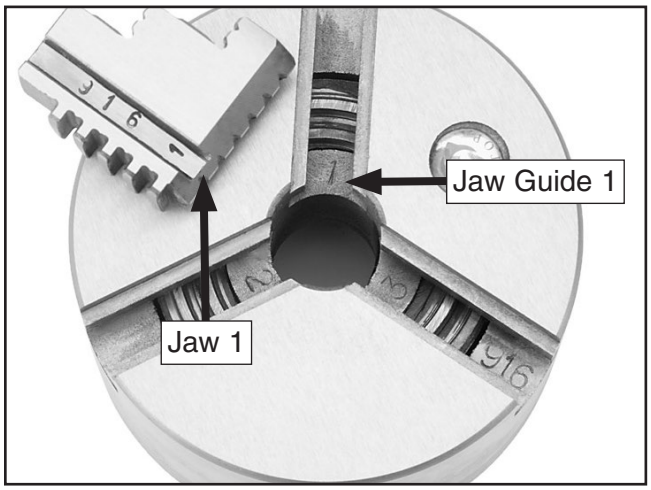


Figure 18. Jaw and jaw guide stamped with corresponding numbers.

3. Insert the chuck key into a scroll keyway and rotate it until you see the beginning of the scroll gear's lead thread come into view through the #1 jaw guide, then back if off slightly until it disappears (see **Figure 19**).

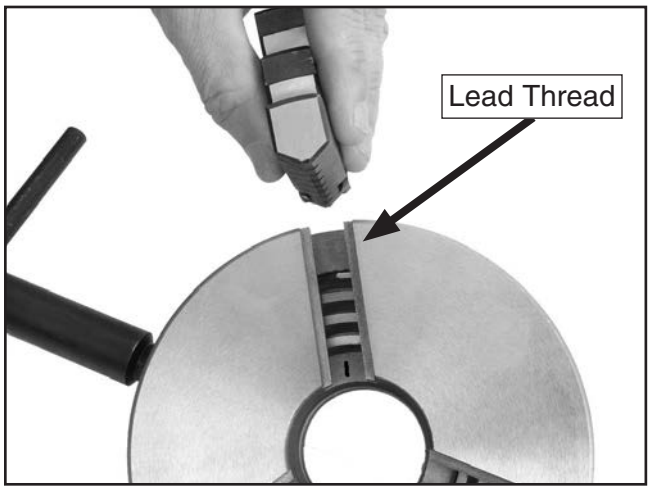


Figure 19. Installing jaw #1.

4. Slide the #1 jaw into the #1 jaw guide and hold it firmly against the scroll gear threads, then rotate the chuck key clockwise approximately one turn until the lead thread engages with the jaw.

   Note: *Tug on the jaw to make sure it is engaged with the scroll gear thread.*

5. Repeat **Steps 3–4** for jaws #2 and #3 in sequence.

6. Rotate the chuck key clockwise to bring the jaws together in the center of the chuck.

   —If installed correctly, the jaws will converge evenly at the center of the chuck.

   —If the jaws do not come together evenly, remove them, make sure the numbers of the jaws and the jaw guides match, then properly re-install them.

4-Jaw Chuck

The 4-jaw chuck included with your lathe features independently adjustable, hardened steel jaws. Each jaw can be removed from the chuck body and reversed for a wide range of work holding configurations. The 4-jaw chuck is typically used to hold non-concentric workpieces (see **Figure 20** for an example).

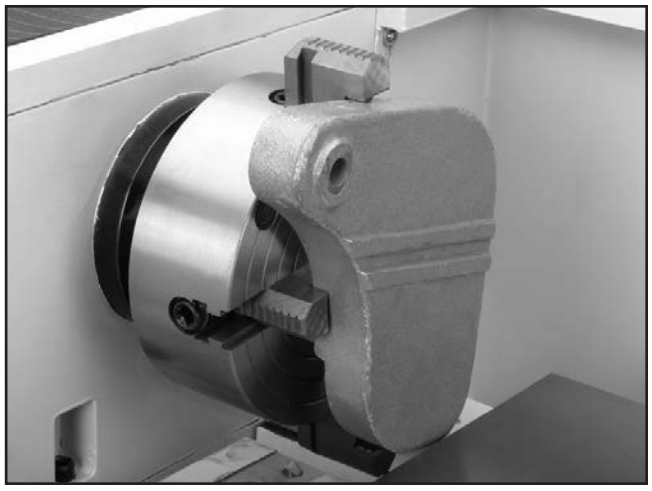


Figure 20. Example of a non-concentric workpiece held in a 4-jaw chuck.

Mount or remove the 4-jaw chuck according the instructions beginning on **Page 20**.

Tools Needed	**Qty**
Hex Wrench 3mm	1
Wrench 19mm	1
4-Jaw Chuck Key	1

Mounting Workpiece

1. DISCONNECT LATHE FROM POWER!

2. Lay a piece of plywood on the bedway underneath the spindle to protect the precision ground surfaces.

3. Loosen the hex nut on the back of the chuck for each jaw (see **Figure 21**).

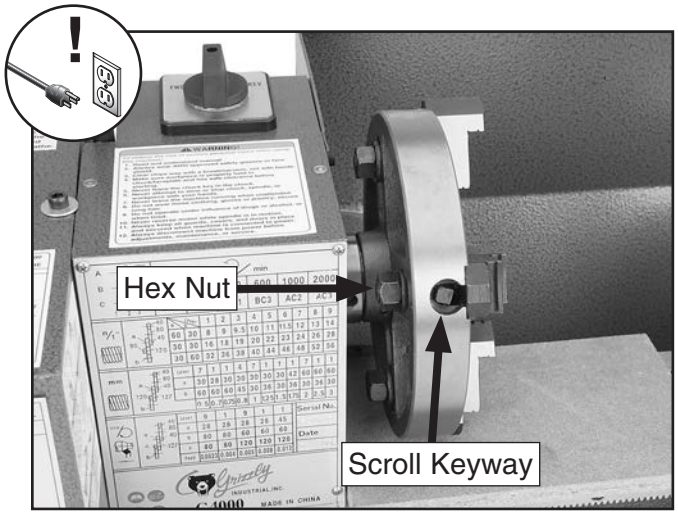


Figure 21. 4-jaw chuck components.

4. With assistance to support the workpiece, use the chuck key to open each jaw until you can position the workpiece flat against the chuck face or evenly on the jaw steps.

5. Tighten each jaw in small increments in an opposing sequence, as illustrated in **Figure 22**, until the workpiece is firmly secure in the desired position.

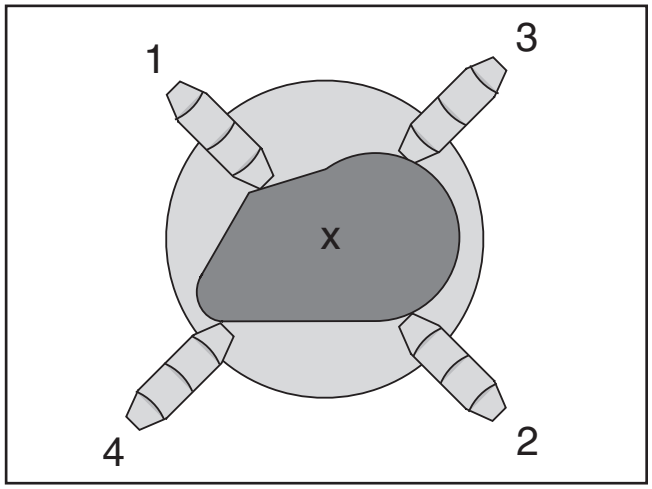


Figure 22. Opposing tightening sequence for the 4-jaw chuck.

6. Make fine adjustments to the workpiece position by using a test indicator mounted on a magnetic base and adjusting the jaws until the workpiece is precisely aligned for your operation (see **Figure 23** for an example).

   Note: *Refer to **ACCESSORIES** on **Page 43** for test indicator options from Grizzly.*

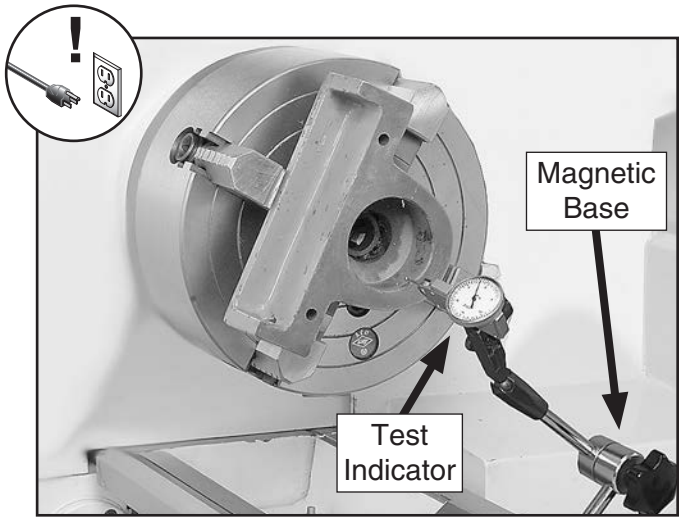


Figure 23. Example of using a test indicator to precisely align a non-concentric workpiece.

⚠WARNING

Always use a low spindle speed when machining non-concentric or off-center workpieces to reduce the risk of ejecting the workpiece from the holding device at a high rate of speed. Failure to heed this warning could lead to serious personal injury, death or property damage.

Faceplate

The faceplate is used to hold non-concentric and off-center parts. Although more versatile in mounting these types of workpieces than the 4-jaw chuck, it requires more work to properly clamp the workpiece (see **Figure 24** for an example).

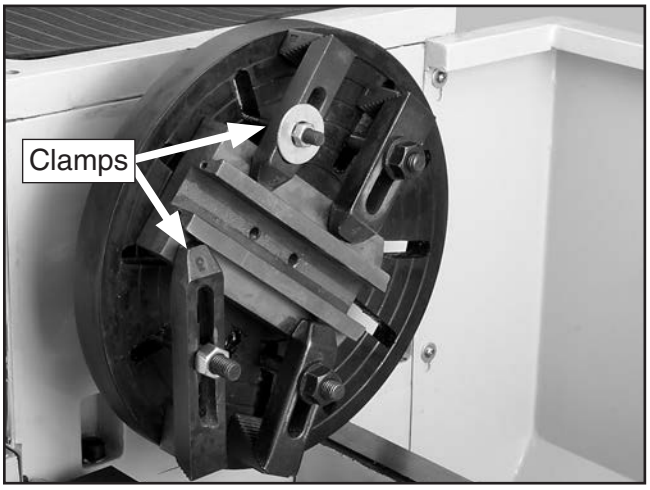


Figure 24. Example of a non-concentric workpiece clamped to a faceplate.

NOTICE

You must use a minimum of three independent clamping devices when using the faceplate to hold a workpiece. Refer to *ACCESSORIES* on *Page 43* for clamping options from Grizzly.

Centers

Your Model G4000 lathe includes three centers: 1) an MT#2 live center, 2) an MT#3 dead center, and 3) an MT#2 dead center, as shown in **Figure 25**.

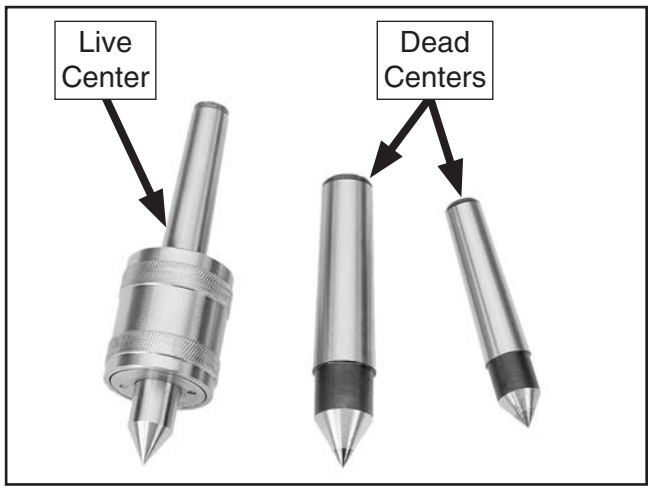


Figure 25. The Model G4000 centers.

The spindle taper is an MT#3 and will only receive the MT#3 dead center. The tailstock quill can accommodate both the MT#2 live and dead center.

Dead Centers

The MT#2 dead center installed in the tailstock quill is used to support stock that is too long to be supported by the chuck alone (see **Figure 26** for an example).

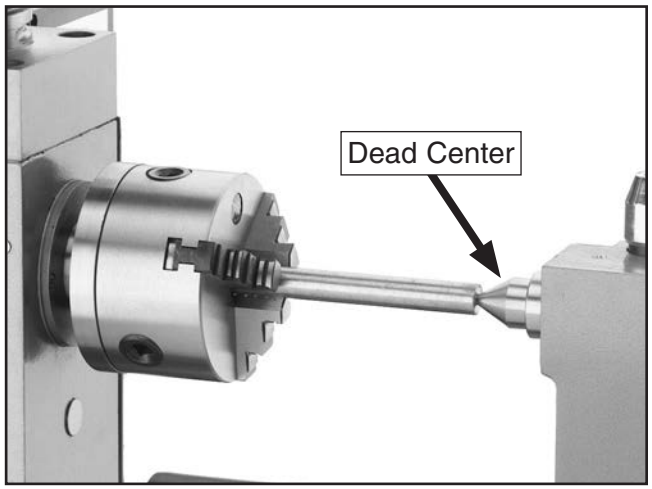


Figure 26. Example of using a dead center installed in the tailstock.

When mounting a long, slender workpiece that extends more than 2½ times its diameter beyond the chuck jaws, use a center mounted in the tailstock to support it.

Since the dead center does not rotate with the workpiece when used in the tailstock, the tip of the center must be lubricated with an anti-sieze lubricant to avoid premature wear and maximize smooth operation. Also, keep the spindle speeds low to reduce the heat and wear from friction.

Install a lathe dog when using the MT#3 dead center in the spindle (see **Figure 27** for an example).

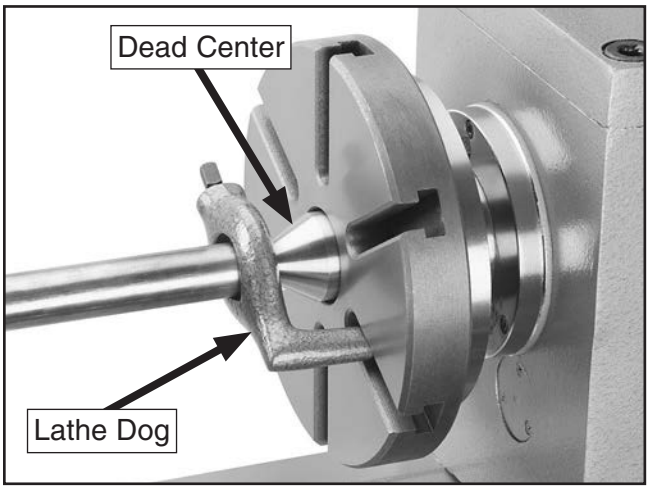


Figure 27. Example of using a dead center with a faceplate and lathe dog.

⚠WARNING

When using a center in the spindle to mount a workpiece, the other end of the workpiece MUST be supported by a center installed in the tailstock quill to safely hold the workpiece in place during operation. Otherwise, the workpiece will leave the lathe when the spindle rotates and could cause serious personal injury or property damage.

Live Centers

The dead center achieves a more accurate finished product but requires low spindle speeds to avoid heat from friction damaging the center of workpiece. The live center has bearings that allow the center tip and the workpiece to rotate together, and can be installed in the tailstock quill for higher speeds and less time spent lubricating the tip, but with a slight bit of accuracy loss.

Using Dead Center in the Spindle

1. DISCONNECT LATHE FROM POWER!

2. Thoroughly clean the tapered mating surfaces of the spindle bore and the MT#3 dead center, then insert the center into the spindle bore through the chuck or faceplate.

3. Install a lathe dog on the workpiece, then mount the workpiece between the spindle and tailstock centers with the lathe dog inserted into the chuck or faceplate (see **Figure 27** on the previous page for an example).

4. To remove the center from the spindle, insert a piece of round bar stock or similar tool through the outboard end (on the left side of the headstock), then tap the center loose.

   Note: *Hold onto the center as you tap it loose to avoid dropping it and damaging the tip or the bedways.*

NOTICE

To avoid premature wear of the dead center or damage to the workpiece, always use lower spindle speeds and keep the dead center tip well lubricated.

Using a Center in the Tailstock

1. DISCONNECT LATHE FROM POWER!

2. Thoroughly clean the tapered mating surfaces of the tailstock quill bore and the center.

3. Use the tailstock handwheel to feed the quill out from the casting at least ½", but for purposes of stability and accuracy no more than 1¼".

   Note: *The scale on the tailstock handwheel is marked in 0.025mm increments (approximately 0.001") with one full revolution moving the quill 1.25mm (approximately 0.050").*

4. Seat the center into the quill, position the tailstock so that the tip of the center presses against the workpiece enough to hold it in place, then tighten the tailstock lock nut.

5. Rotate the tailstock handwheel clockwise to feed the center farther into the workpiece until it is snug, then tighten the quill lock lever.

   Note: *The force against the mounted workpiece will fully seat the center's taper into the quill. However, do not overly force the center into the workpiece with the handwheel—this will make removing the center very difficult and could damage it.*

6. To remove the center from the quill, hold onto it with one hand, then rotate the tailstock handwheel counterclockwise to draw the quill back into the casting until the center releases.

Offsetting Tailstock

The tailstock can be offset slightly from the spindle center line to cut shallow tapers in a workpiece mounted between centers. When the tailstock is offset toward the operator, the machined workpiece will be smaller at the tailstock end. Conversely, if the tailstock is offset away from the operator, the taper will be smaller at the spindle end.

Tools Needed	**Qty**
Hex Wrench 4mm	1
Wrench 14mm	1

To set the tailstock offset:

1. Loosen the tailstock lock nut (see **Figure 28**).

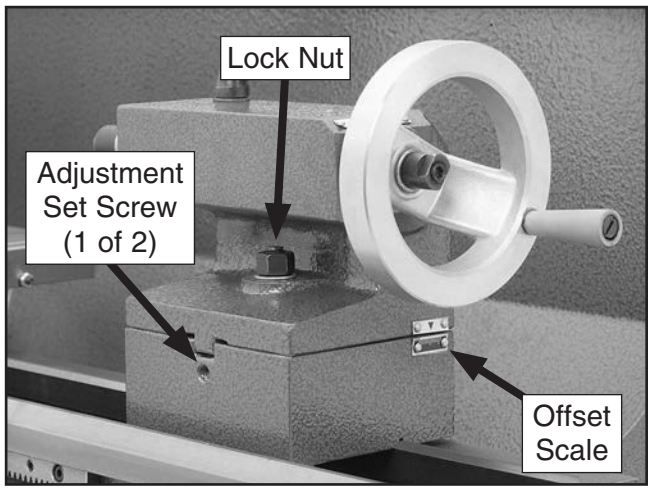


Figure 28. Tailstock offsetting controls.

2. Alternately loosen and tighten the two adjustment set screws (one on either side of the tailstock) until the desired offset is indicated on the offset scale, then retighten the lock nut.

3. To return the tailstock back to the original position, repeat **Step 2** until the centered position is reached.

Note: *For purposes of accuracy, you may want to perform the* ***Aligning Tailstock*** *procedure on* ***this page*** *after offset adjustments have been made.*

Aligning Tailstock

The tailstock was aligned with the spindle at the factory. However, we recommend that you take the time to ensure that the tailstock is aligned to your own desired tolerances, especially if you have made tailstock offset adjustments.

To align the tailstock with the spindle:

1. Use a precision level to make sure the lathe bedway is exactly level from side-to-side and front-to-back. If necessary, use shims between the lathe and chip pan.

2. Center drill a 6" long piece of round bar stock on both ends. Set it aside for use in **Step 5**.

Note: *If the tailstock is out of alignment by only a few thousands of an inch, the center drill will find the center point during the drilling process. If the tailstock appears grossly out of alignment, adjust the tailstock offset until it appears to be centered.*

3. Make a dead center by turning a shoulder on a similar piece of round stock, then flip the piece over in the chuck and turn a 60° point (see **Figure 29**).

Note: *As long as the fabricated dead center remains in the chuck, the point of this center will remain true to the spindle center line. However, if it is removed, the point will have to be re-finished before using it for this procedure again.*

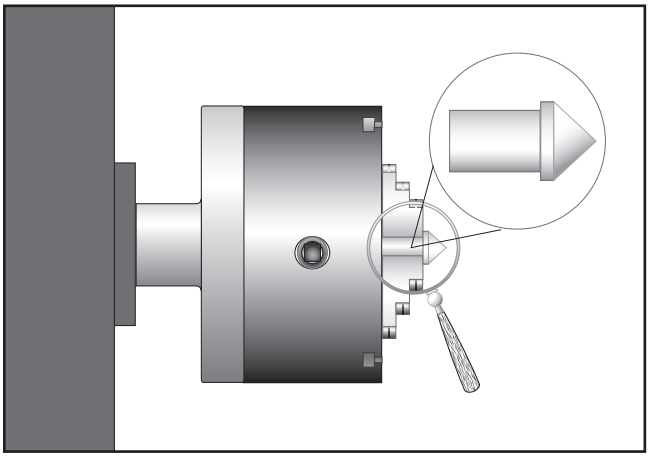


Figure 29. The fabricated dead center.

4. Install the MT#2 dead center into the tailstock.

5. Attach a lathe dog on the spindle end of the bar stock from **Step 2**, then mount the workpiece between the centers (see **Figure 30** for an example).

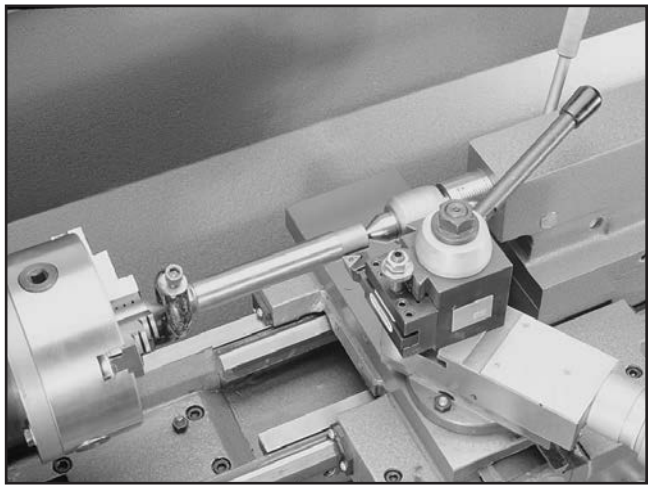


Figure 30. Example of bar stock mounted between centers.

6. Turn approximately 0.010" off the diameter of the entire length of the workpiece.

7. Mount a test or dial indicator so that the plunger is on the tailstock quill.

   Note: *If necessary in the following step, refer to* ***Offsetting Tailstock*** *on* ***Page 27*** *for adjusting the tailstock position.*

8. Use a caliper to measure both ends of the workpiece.

   —If the machined workpiece is *thicker* at the tailstock end, move the tailstock *toward* the operator ½ the distance of the amount of taper (see **Figure 31**).

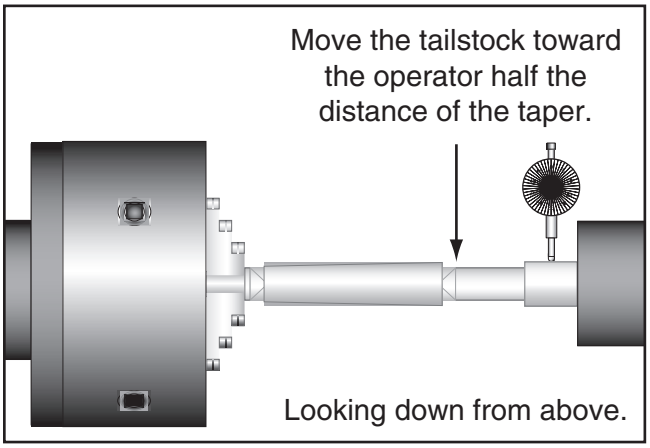


Figure 31. Adjust tailstock toward the operator.

   —If the machined workpiece is *thinner* at the tailstock end, move the tailstock *away* from the operator ½ the distance of the amount of taper (see **Figure 32**).

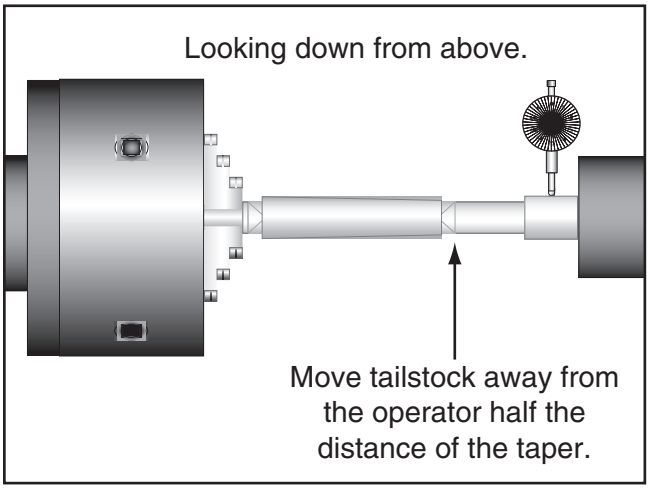


Figure 32. Adjust tailstock away from the operator.

Drilling with Tailstock

The tailstock can be used to drill holes by mounting a drill bit in the tailstock, rotating the workpiece with the spindle, then using the tailstock quill handwheel to advance the drill bit into the workpiece. See **Figures 33–34** for examples of drill chuck and tapered drill bit installation.

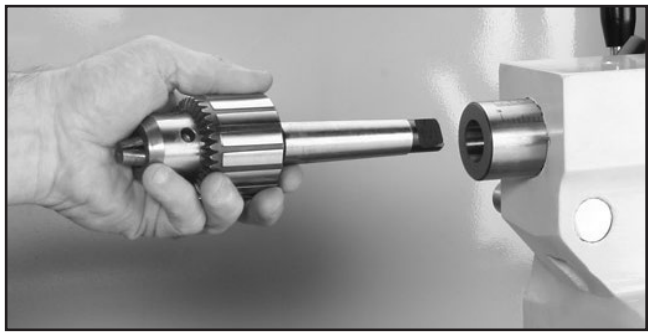


Figure 33. Example of drill chuck installation.

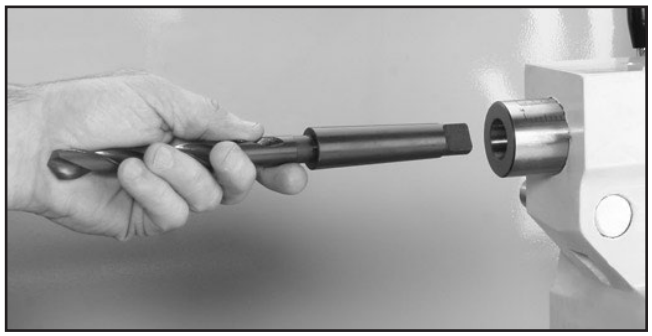


Figure 34. Example of drill bit installation.

Steady Rest

The steady rest serves as a support for long, slender workpieces that extend beyond the chuck or faceplate more than 2½ times its diameter and a center mounted in the tailstock cannot be used. This is accomplished by adjusting the brass fingers of the rest so that they evenly contact the workpiece on three sides to support it and still allow it to freely rotate.

The steady rest can be positioned for purposes of stability and accuracy on either side of the carriage and anywhere along the bedway.

Tools Needed	**Qty**
Wrench 13mm	1

To install and use the steady rest:

1. DISCONNECT LATHE FROM POWER!

2. Remove the clamp hex nut, bolt, and clamp block from the bottom of the steady rest (see **Figure 35**).

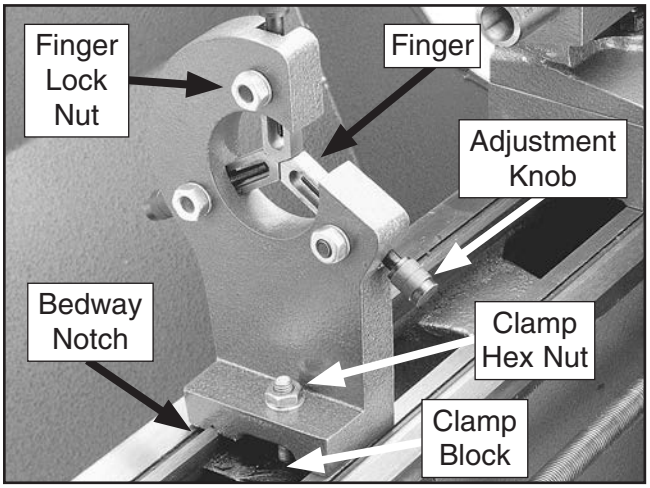


Figure 35. Steady rest components.

3. Clean away any debris and grime from the bedways, the steady rest ways, and the clamp block.

4. Align the bedway notch in the base of the steady rest with the rear bedway, then secure the rest with the hardware removed in **Step 2**.

5. Loosen the finger lock nuts, turn the adjustment knobs until the fingers make even contact with the workpiece, then re-tighten the lock nuts.

   Note: *The fingers should rest against the workpiece to fully support it at all three points, but also allow it to freely rotate with the spindle without causing deflection.*

6. Lubricate the finger tips with anti-seize grease during operation.

   Note: *After prolonged use, the fingers will require milling or filing to clean up the contact surfaces.*

Follow Rest

The follow rest shown in **Figure 36** is mounted on the front of the carriage saddle and follows the movement of the tool along the length of the workpiece. The follow rest is used on long, slender parts to prevent flexing of the workpiece from the pressure of the cutting tool. This rest requires only two fingers as the cutting tool acts as the third support.

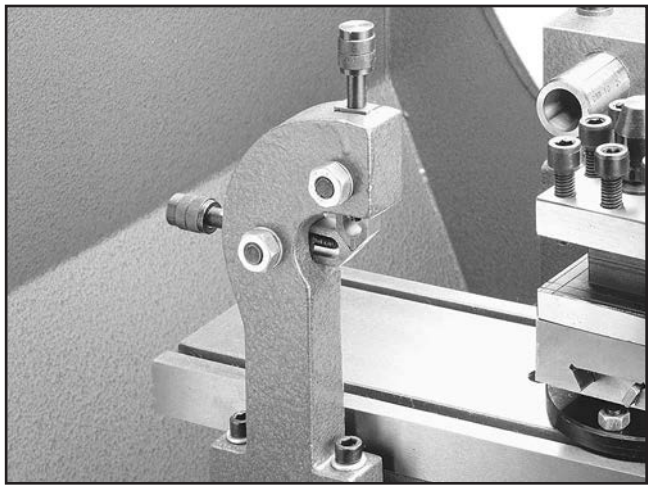


Figure 36. Follow rest.

The follow rest is installed/removed with two cap screws at the base. The fingers are set against the workpiece in the same manner as those of the steady rest. Always lubricate the finger tips with an anti-seize grease during operation.

Cross Slide

Handwheel Dial Increments	**Distance**
One Increment	0.025mm (approx. 0.001")
One Full Rotation	1.250mm (approx 0.050")

The cross slide sits directly on the carriage saddle and moves the cutting tool perpendicular to the workpiece when the handwheel is rotated (see **Figure 37**).

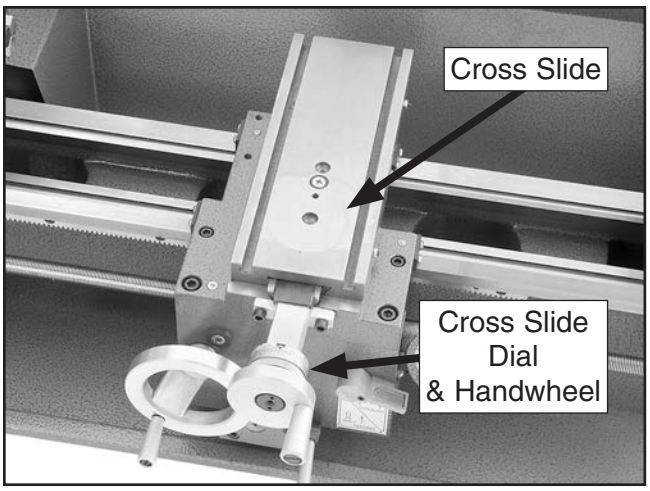


Figure 37. Cross slide (compound slide removed for photo clarity).

The cross slide dial on your lathe has a 2:1 ratio.

This means:

- The dial shows the actual distance the tool moves in-or-out.
- The amount removed from the workpiece will be **twice** the distance the dial indicates.

For example, if you wanted to remove 0.200" from the diameter of the workpiece, you would rotate the cross slide handwheel only 0.100" as indicated on the dial.

Compound Slide

Handwheel Dial Increments	Distance
One Increment	0.001"
One Full Rotation	0.040"

The compound slide sits on the cross slide and is the base for the tool post. This slide rotates around its mounting on the cross slide and moves in-and-out using the handwheel. These features allow the operator to engage the cutting tool with the workpiece at any angle necessary for the operation.

Tools Needed	Qty
Wrench 10mm	1

To set the compound slide angle:

1. Loosen the hex nuts on either side of the compound slide (see **Figure 38**).

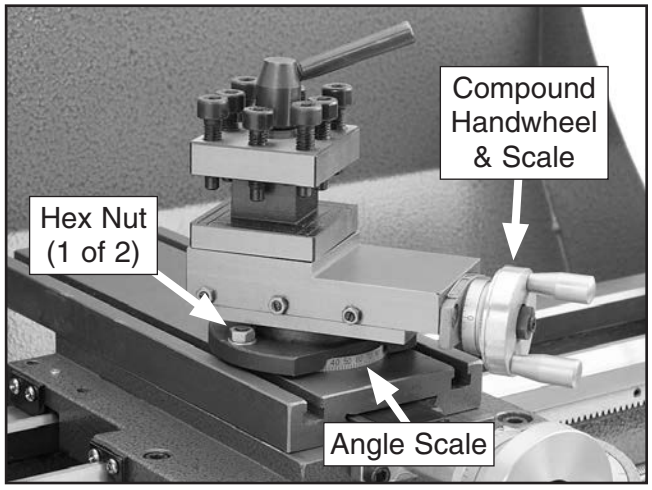


Figure 38. Compound slide controls.

2. Rotate the slide until the desired angle is indicated on the angle scale, then re-tighten the two hex nuts.

Tool Holders

Your Model G4000 lathe ships with a 4-way tool post and C-type tool holder. The advantage of the 4-way tool post is that it can hold four cutting tools at one time, and each tool can be quickly indexed (rotated) to the workpiece as needed.

4-Way Tool Post

Tools Needed	Qty
Hex Wrench 6mm	1

To use the 4-way tool post:

1. Loosen the tool post cap screws until the tool fits underneath them, as shown in **Figure 39**, then evenly and firmly tighten the cap screws to secure the tool.

NOTICE

To properly secure the tool against the forces of cutting, the tool must be firmly secured with at least two post cap screws.

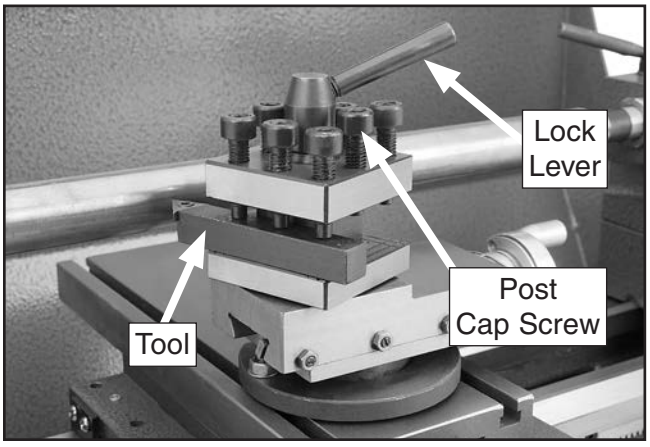


Figure 39. 4-way tool post with tool mounted.

2. Repeat **Step 1** for any remaining tools.

3. Loosen the lock lever, rotate tool post to index the desired tool to the workpiece, then re-tighten the lock lever.

   Note: *The 4-way tool post is aligned in four rotational positions by an indexing pin mounted in the compound slide that engages slots underneath the tool post base.*

C-Type Tool Holder

Tools Needed **Qty**
Wrench 13mm 1

To use the C-type tool holder:

1. DISCONNECT LATHE FROM POWER!

2. Remove the 4-way tool post from the compound slide.

3. Replace the beveled pin from the compound slide with the 8 x 20mm pin (see **Figure 40**).

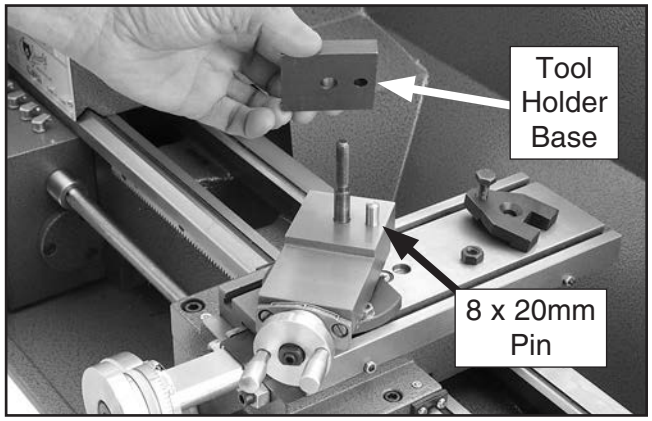


Figure 40. C-type tool holder components.

4. Slide the tool holder base onto the tool post bolt, then rotate it until the pin is inserted into the base indent.

5. Thread the M8-1.25 x 30 hex bolt into the holder top, slide the top onto the tool post bolt, then secure the tool with the M8-1.25 hex nut (see **Figure 41**).

Note: *Thread the hex bolt up or down to make sure the holder top is level and makes even contact with the tool.*

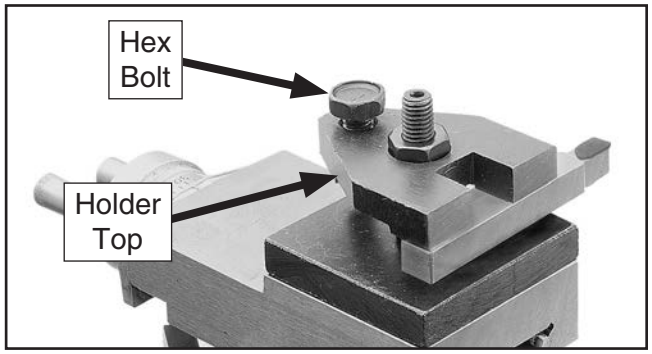


Figure 41. Cutting tool properly installed in the C-type tool holder.

Spindle Speed

The spindle speed is controlled by belts and pulleys inside the change gear cover (see **Figure 42**).

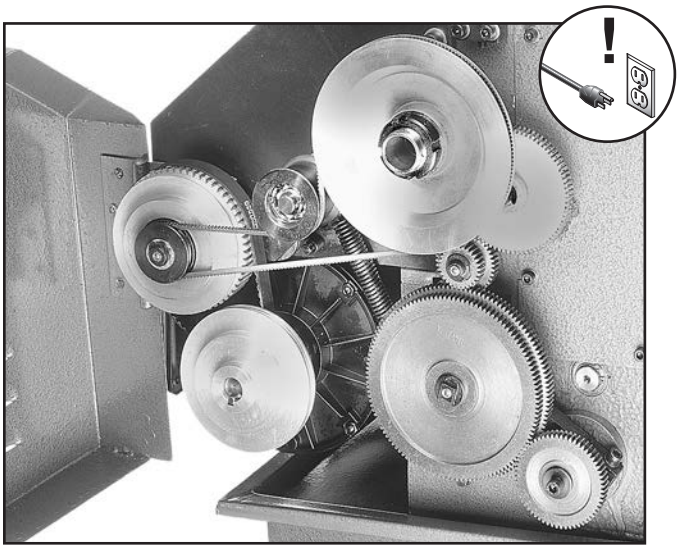
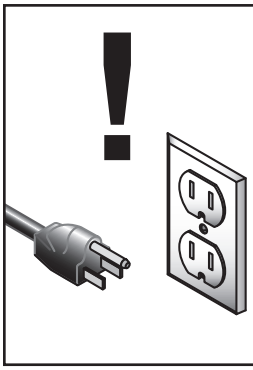


Figure 42. Belts and gears inside the change gear cover.

To set the correct spindle speed for your operation, you will need to: 1) Determine the spindle speed (RPM) needed for your operation, and 2) configure the spindle belt on the pulleys for the calculated speed.



⚠WARNING

The gears, pulleys, and belts inside the change gear cover represent severe entanglement hazards. ALWAYS disconnect the lathe from power before opening the change gear cover.

Calculating Correct Spindle Speed

1. Use the table in **Figure 43** to determine the recommended cutting speed for the workpiece material.

Note: *Cutting speeds are expressed in SFM (surface feet per minute) that the workpiece moves against the cutter, which is different from the spindle speed (RPM).*

Recommended Cutting Speeds		
	Average Tool Speed (sfm)	
Work Material	*Rough Cuts*	*Finish Cuts*
Magnesium	400	800
Aluminum	350	700
Brass & Bronze	250	500
Copper	100	250
Cast Iron (Soft)	100	250
Cast Iron (Hard)	50	150
Mild Steel	100	250
Cast Steel	70	150
Alloy Steels (Hard)	50	150
Tool Steel	50	150
Stainless Steel	60	180
Titanium	90	200
Hi Maganese Steel	40	100
Note: *These values are based on HSS cutting tools. For carbide cutting tools, double the average speed. These values are a guideline only. Refer to the MACHINERY'S HANDBOOK for more detailed information.*		

Figure 43. Cutting speed table.

2. Determine the final diameter, in inches, for the cut you intend to make.

Note: *For this step, you will need to average out the diameters or work with the finish diameter.*

3. Use the following formula to determine the correct spindle speed (RPM) for your operation:

$$\textbf{Spindle Speed} = \frac{\textbf{Cutting Speed (SFM) x 4}}{\textbf{Diameter of Cut}}$$

Example A:

You will finish cut ½" diameter piece of cast steel stock, using an HSS cutting tool.

Step 1:
150 (SFM from chart) x 4 = 600

Step 2:
600 / .5" (Diameter of workpiece) = 1200

Result:
The correct spindle speed is 1200 RPM.

Example B:

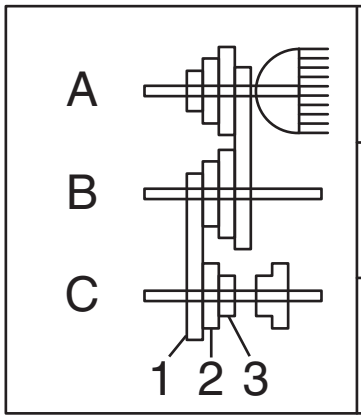
You will rough turn a 1" diameter piece of stainless steel, using a carbide cutting tool.

Step 1:
60 (SFM from chart) x 2 (for carbide tool) = 120

Step 2:
120 (Calculated SFM) x 4 = 480

Step 3:
480 / 1" (Diameter of workpiece) = 480 RPM

Result:
The correct spindle speed is 480 RPM.



min					
120	300	400	600	1000	2000
BC1	BC2	AC1	BC3	AC2	AC3

Figure 44. Model G4000 spindle speed configuration chart.

Configuring Spindle Belt

There are six spindle speeds available by properly positioning the spindle belt on the motor pulley (**A**), the idler pulley (**B**), and the spindle pulley (**C**).

To configure the spindle belt:

1. DISCONNECT LATHE FROM POWER.

2. Refer to the chart in **Figure 44** above and find the spindle speed that is closest to your calculated spindle speed.

   Note: *This chart is also on the front of the headstock. In most cases, the calculated spindle speed will be between the available speeds. Use your best judgement when choosing either the higher or lower speed.*

3. Open the change gear cover and use **Figure 45** to identify the motor (**A**), idler (**B**), and spindle (**C**) pulleys, the spindle belt, and the belt tensioning pulley.

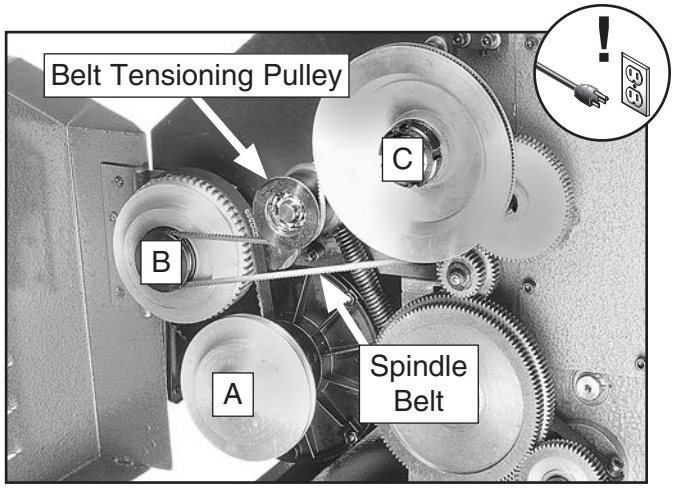


Figure 45. Spindle speed pulleys and spindle belt.

4. Release the tension on the spindle belt by pulling the belt tensioning lever all the way forward.

5. Position the spindle belt onto the pulley combination as indicated under the selected spindle speed in the chart, then push the belt tensioning lever all the way back to apply the proper tension to the spindle belt.

   Note: *Use the illustrations in **Figure 46** on the next page to aid in the spindle belt configuration.*

6. Close and secure the change gear cover before connecting the machine to power.

Example:
You will need to configure the lathe for a spindle speed of 1200 RPM, as required by **Example A** on the previous page.

Step 1: Examine the spindle speed chart to find that the available speed of 1000 RPM is the closest to the calculated speed.

Step 2: Note that the spindle belt configuration underneath 1000 RPM on the chart is AC2.

Step 3: Position the spindle belt on the second pulley slot on the motor and spindle pulleys.

Note: *The pulley slots are counted 1 through 3, beginning with the outside slot.*

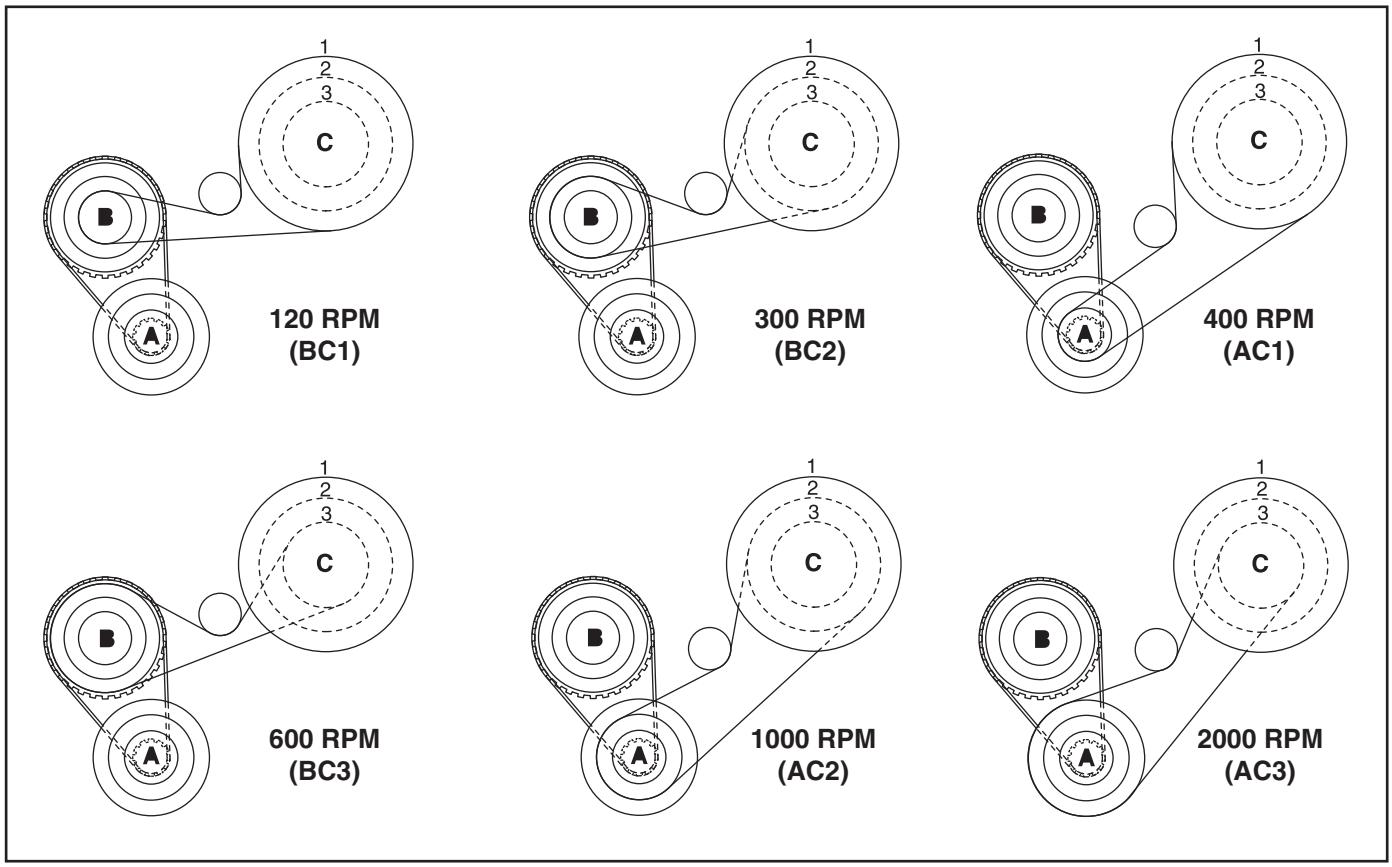


Figure 46. Illustrations of spindle belt configurations for each available spindle speed.

Feed Rate Lever

The feed rate lever shown in **Figure 47** is used with the change gears to provide the various powered feed rates for the carriage.

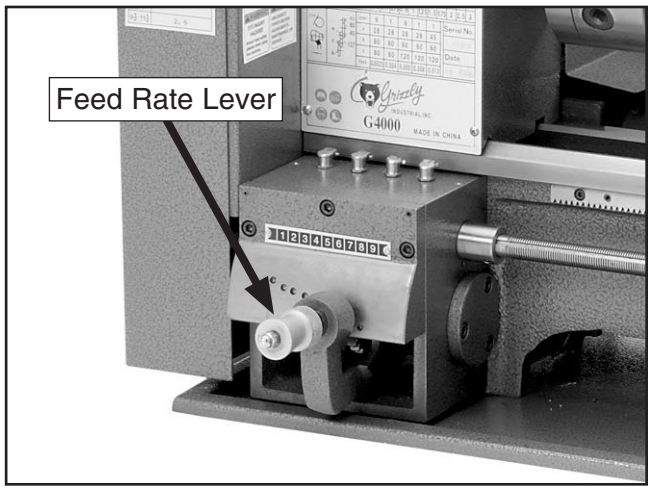


Figure 47. Feed rate lever.

NOTICE

Attempting to move the feed rate lever when the spindle is rotating will damage the internal gears of the power feed mechanism and will void the warranty. NEVER attempt to move the feed rate lever when the lathe is running.

To set the feed rate lever:

1. Make sure the spindle is ***OFF*** and has come to a complete stop.

Continued on next page ⟶

Note: *In the next step, the gears must properly mesh. It may be necessary to rock the spindle back-and-forth by hand until the gears mesh. Also, use one hand on the bottom of the lever to apply sideways pressure when moving it.*

2. Pull the lever knob out, slide the lever under the correct hole, raise it up to align the lever pin with the hole, then release the knob.

Note: *Make sure the lever pin is firmly seated into the hole before continuing the operation.*

Change Gears

In addition to setting the feed rate lever, the change gears shown in **Figure 48** work with the feed rate lever to provide the various powered feed rates for the carriage.

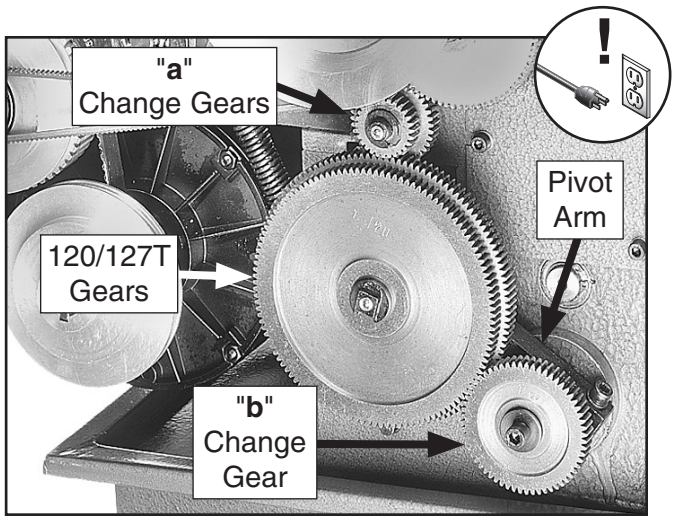
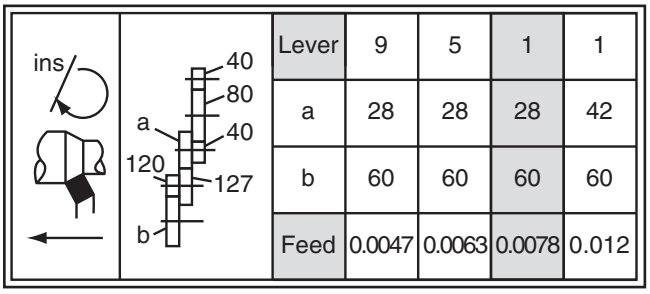


Figure 48. Change gears.

When configuring the change gears, follow these rules to ensure good results:

- When removing or replacing the change gears, thoroughly clean the gears, bushings, and the gear shafts with a stiff brush and mineral spirits. When dry apply a thin coat of light machine oil to the gear teeth, the bushings, and the gear shafts to prevent corrosion and ensure smooth movement.
- Leave 0.002"–0.003" of backlash between the gears when you mesh them together so that they do not bind.
- To avoid restricting gear rotation, do not overly tighten the fasteners that secure them. This hardware is intended to just keep them in place.
- Before starting the lathe, rotate the change gears by hand to make sure they have proper backlash and rotate freely.

To learn how to configure the change gears, perform the following instructions to set up the lathe for the feed rate of 0.0078 in./rev. (inches of travel per revolution of the spindle), which is referred to in the grayed sections of the feed rate chart in **Figure 49**.



Lever	9	5	1	1
a	28	28	28	42
b	60	60	60	60
Feed	0.0047	0.0063	0.0078	0.012

Figure 49. Sections of the feed rate chart greyed illustrate the example.

Tools Needed	**Qty**
Hex Wrench 5mm	1
Wrench or Socket 10mm	1
Flat Head Screwdriver #2	1

To configure the change gears for a feed rate of 0.0078 in./rev.:

1. DISCONNECT LATHE FROM POWER!

2. Open the change gear cover.

3. Loosen the cap screw that secures the pivot arm, then lower the 120/127T gears away from the "**a**" gears (see **Figure 48**).

4. Remove the E-clip that secures the "**a**" gears, then remove the gears from the shaft (see **Figure 50**).

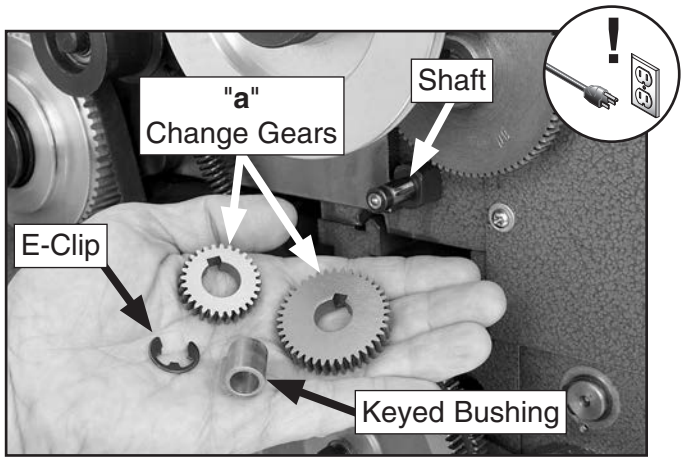


Figure 50. "**a**" change gears and shaft components.

5. Carefully remove the keyed bushing from the center of the gears, orient the 28T and 40T gears together, then re-insert the bushing to secure the assembly.

6. Slide the "**a**" gears onto the gear shaft so that the 28T gear is facing out and the 40T gear meshes with the 80T gear above it, then secure them in place with the E-clip.

7. Remove the special bolt and washers that secure the 120/127 combo gear, then remove the gears from the gear shaft (see **Figure 51**).

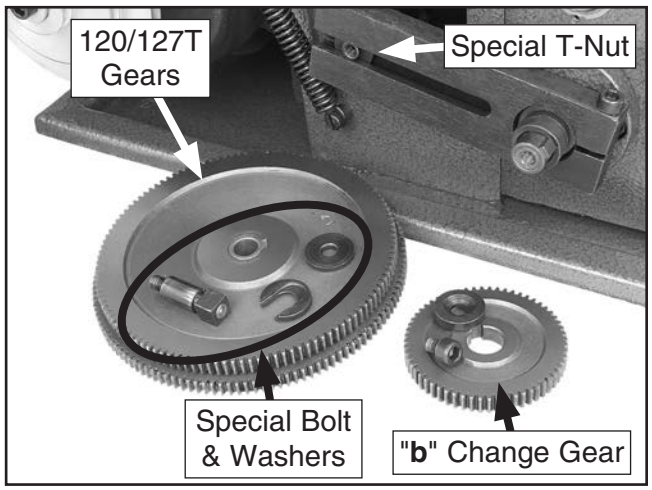


Figure 51. 120/127T Gears and "**b**" change gear removed.

8. Carefully remove the keyed bushing from the center of the gears, orient the 120T and 127T gears together, then re-insert the bushing to secure the assembly.

9. With the 120T gear facing out, insert the special bolt with the slotted washer through the front of the assembly, slide the remaining flat washer onto the bolt from the rear of the gears.

10. Thread the bolt into the special T-nut on the pivot arm, but leave it loose and slide the 120/127T gears to the left and away from the "**b**" gear.

11. Remove the cap screw and flat washer that secure the "**b**" gear, then remove the gear from the gear shaft (see **Figure 51**).

12. Align the keyway on the 60T gear with the gear shaft key, then install the gear and secure it with the cap screw and flat washer.

13. Move the 120/127T gears to the right and mesh the 120T gear and the 60T "**b**" gear, then tighten the special bolt to secure the 120/127T gears in place.

14. Rotate the pivot arm up so that the 127T and 28T "**a**" gear mesh, then tighten the pivot arm cap screw to secure it in place, as shown in **Figure 52**.

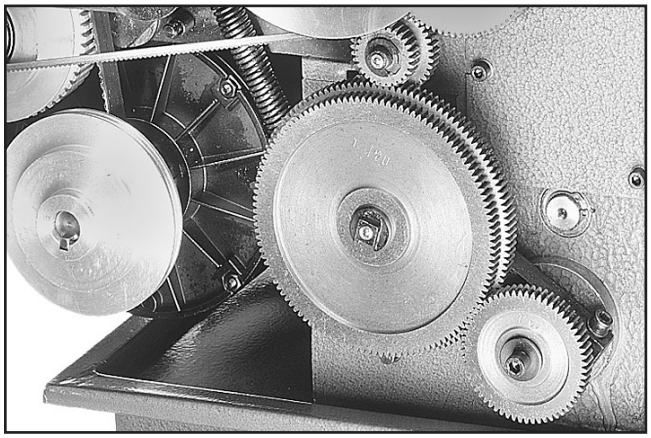


Figure 52. Change gears configured for a feed rate of 0.0078".

15. Rotate the spindle pulley by hand to make sure that all the change gears are properly meshed, freely rotating, and with 0.002"—0.003" of backlash

—If the change gears are not properly meshed and freely rotating, repeat this procedure.

16. Close and secure the change gear cover.

Power Feed (Non-Threading)

Power feed on the Model G4000 simple means using the machine-driven components to move the carriage left or right along the workpiece rather than manually rotating the handwheel.

The powered speed at which the carriage travels is set with the feed rate lever and the change gears, but it is also dependent upon the spindle speed.

The correct powered feed rate of the carriage and the spindle speed is determined by the material to be machined, the type of tooling used, and by the desired finish. Refer to the table in **Figure 53** or the *Machinery's Handbook* for guidelines.

Note: *This chart provides the cutting speed for a given feed rate. You must use the cutting speed with the formula on **Page 33** to calculate the correct spindle speed (RPM) for the chosen feed rate.*

Note: *These instructions are only valid for non-threading operations. To configure the feed rate for threading, refer to the **Threading** subsection on **Page 40**.*

To engage the power feed for non-threading operations:

1. DISCONNECT LATHE FROM POWER!

2. Examine the feed rate chart in **Figure 55** to determine the necessary configurations for the change gears and feed rate lever.

   Note: *The feed rate chart is also displayed on the front of the headstock.*

   a. Find the desired feed rate on the bottom row of the chart labeled **Feed**.

   b. Set the feed rate lever as directed by the number at the top of that column on the line labeled **Lever** (refer to **Feed Rate Lever** on **Page 35** for detailed instructions).

	Low Carbon Steel	High Carbon Annealed Steel	Normalized Allow Steel	Aluminum Alloys	Cast Iron	Bronze
Rough Cutting Speed SFM	90	50	45	200	70	100
Rough Feed Rate IPR	0.010" to 0.020"	0.010" to 0.020"	0.010" to 0.020"	0.015" to 0.030"	0.010" to 0.020"	0.010" to 0.020"
Finish Cutting Speed SFM	120	65	60	300	80	130
Finish Feed Rate IPR	0.003" to 0.005"	0.003" to 0.005"	0.003" to 0.005"	0.005" to 0.010"	0.003" to 0.010"	0.003" to 0.010"
SFM = Surface Feet per Minute **IPR** = Inches per Revolution						
Note: *These values are for HSS cutting tools. For carbide cutting tools, double the cutting speed. These values still may need slight adjustment depending on the cutting tool rake and relief angles. Refer to the MACHINERY'S HANDBOOK for more detailed information.*						

Figure 53. HSS cutting speed and feed rate table.

NOTICE

Carriage feed rate is dependent upon the spindle speed—higher spindle speeds equal higher feed rates! Pay close attention to the rate of the powered carriage movement and keep your hand poised over the feed lever to disengage it when necessary. Failure to fully understand this could result in the carriage crashing into the headstock or tailstock causing severe damage to the lathe.

c. Configure the "**a**" and "**b**" change gears as directed (refer to **Change Gears** on **Page 36** for detailed instructions).

Note: *When configuring the change gears for non-threading feed rates, always have the 120T gear facing out.*

3. Use the handwheels to properly position the tool against the workpiece that is correct for your operation.

NOTICE

NEVER attempt to engage the feed lever (up) and half-nut lever (down) at the same time, and NEVER force these levers. Otherwise, severe damage to the lathe could occur.

4. Push the feed lever up to engage the carriage gears with the leadscrew (see **Figure 54**).

Note: *It may be necessary to rock the carriage handwheel back-and-forth to mesh the feed gear with the leadscrew.*

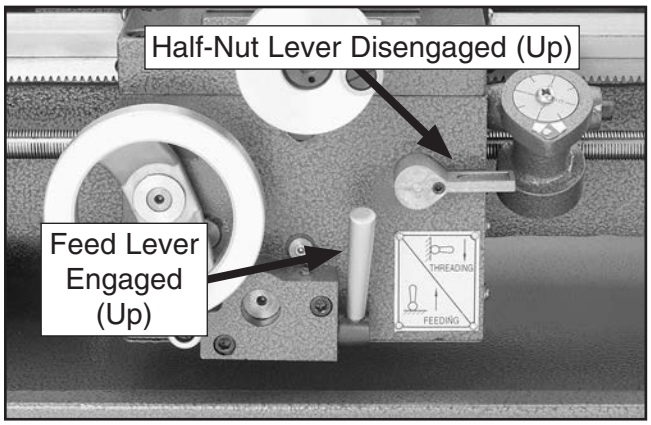


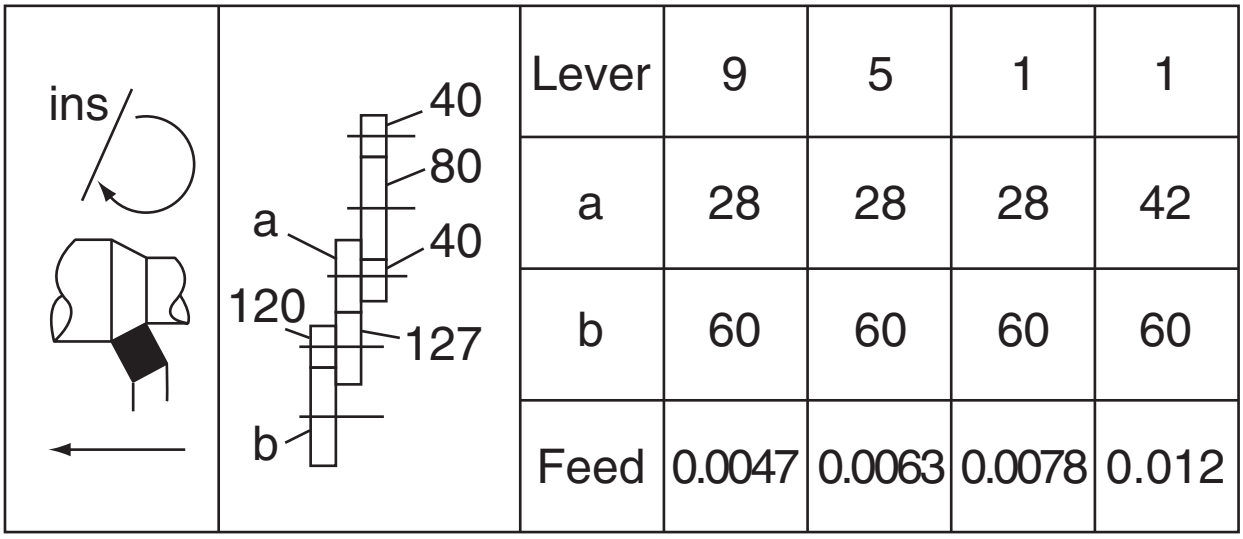
Figure 54. Feed lever in the engaged (up) position.

5. Push the half-nut lever up to disengage the half-nut from the leadscrew, as shown in **Figure 54**.

6. Connect the lathe to power, then with one hand poised over the feed lever, start the spindle rotation.

Note: *The direction of the carriage reverses when the spindle direction reverses.*

7. When required, push down on the feed lever to disengage the carriage from the leadscrew and stop its movement.



Lever	9	5	1	1
a	28	28	28	42
b	60	60	60	60
Feed	0.0047	0.0063	0.0078	0.012

Figure 55. Model G4000 feed rate chart.

Threading Controls

The purpose of this subsection is to orient you with the controls used when threading and how to use the threading dial.

If you are unfamiliar with threading on a lathe, we strongly recommend that you read books, review industry trade magazines, or get formal training before beginning any threading projects.

Feed Lever

The feed lever must be in the disengaged (down and horizontal) for threading operations or the half-nut will not engage with the leadscrew (see **Figure 56**).

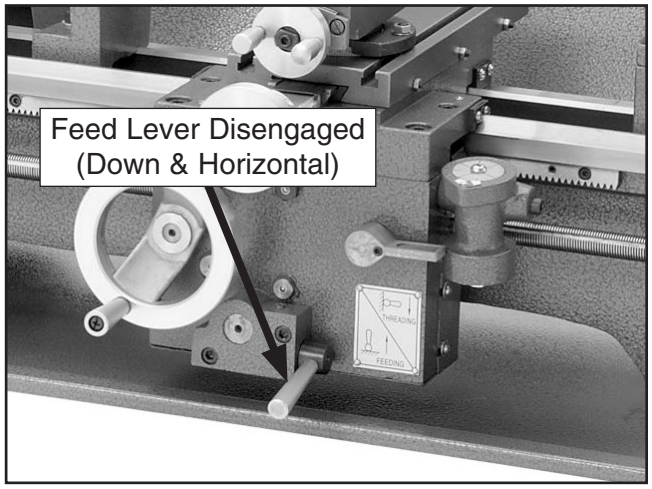


Figure 56. The feed lever in the disengaged position.

Half-Nut Lever

The half-nut lever engages the carriage with the leadscrew which moves the cutting tool along the length of the workpiece (see **Figure 57**).

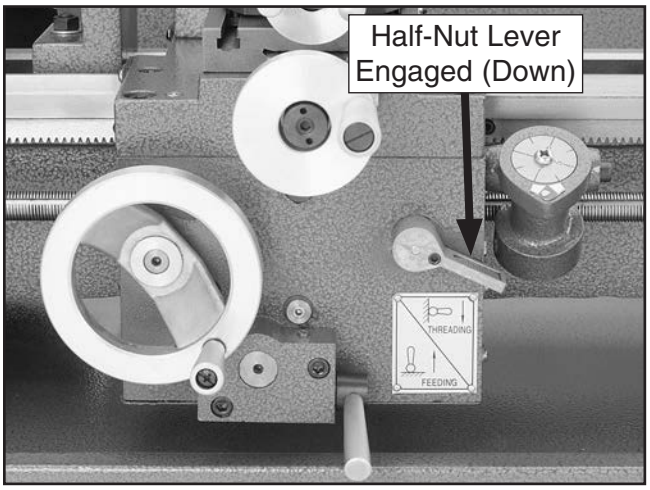


Figure 57. Half-nut lever engaged (down) for threading operations.

Thread Dial & Chart

The numbers on the thread dial are used with the thread dial chart to show when to engage the half-nut during inch threading. The thread dial gear must be engaged with the leadscrew for this to work. Loosen the cap screw that secures the thread dial, then pivot it so that the dial gear meshes with the leadscrew, as shown in **Figure 58**.

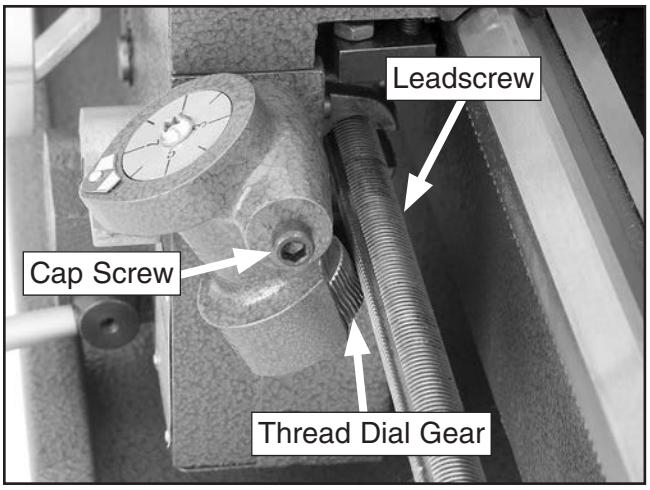


Figure 58. Thread dial gear engaged with the leadscrew.

To use the thread dial chart (see **Figure 59**), find the TPI (threads per inch) on the chart that you want to cut, then reference the dial number to the right of it. The dial numbers indicate when to engage the half-nut for a specific thread pitch.

Note: *The thread dial chart can also be found on the front of the change gear door.*

THREAD DIAL	
T. P. I.	DIAL
8 10 12 14 16 18 20 22 24 26 26 30 36 36 40 44 46 48 52 56	1 – 8
9 11 13 19 23	1, 3 5, 7
$9\frac{1}{2}$ – $11\frac{1}{2}$	2, 6

Figure 59. Thread dial chart.

For example, to cut a TPI of 11, engage the half-nut when the thread dial points to the 1, 3, 5, or 7. To cut a TPI of 24, engage the half-nut on any number between 1 and 8.

To maintain accuracy and consistency, engage the half-nut on the same thread dial number for each pass. Failure to start on the same number each time may lead to cutting off the thread made in the previous pass.

Note: *The thread dial is not used when cutting metric threads. Leave the half-nut engaged from the beginning until the threads are complete.*

NOTICE

DO NOT engage the half-nut when the spindle speed is over 300 RPM. Otherwise, damage to the leadscrew or carriage components could occur.

Understanding Threading Charts

The threading charts illustrated in **Figure 60** show the various feed rate lever and change gear configurations for the inch and metric threading operations that your lathe can perform.

The top chart is for inch threading. Find the TPI for your operation in the columns under the top row of numbers from 1 to 9. This top row is the setting for the feed rate lever. The correct "**a**" and "**b**" gears to use are shown in the two left columns, and the configuration of these gears is illustrated to the left of that.

For example, for a inch thread pitch of 11, the feed rate lever is set to 5, and the 60T "**a**" and the 30T "**b**" gears are used.

The bottom metric threading chart is arranged with the thread pitch selection in the bottom row, the feed rate lever setting in the top row, and the "**a**" and "**b**" change gear selection in the middle rows.

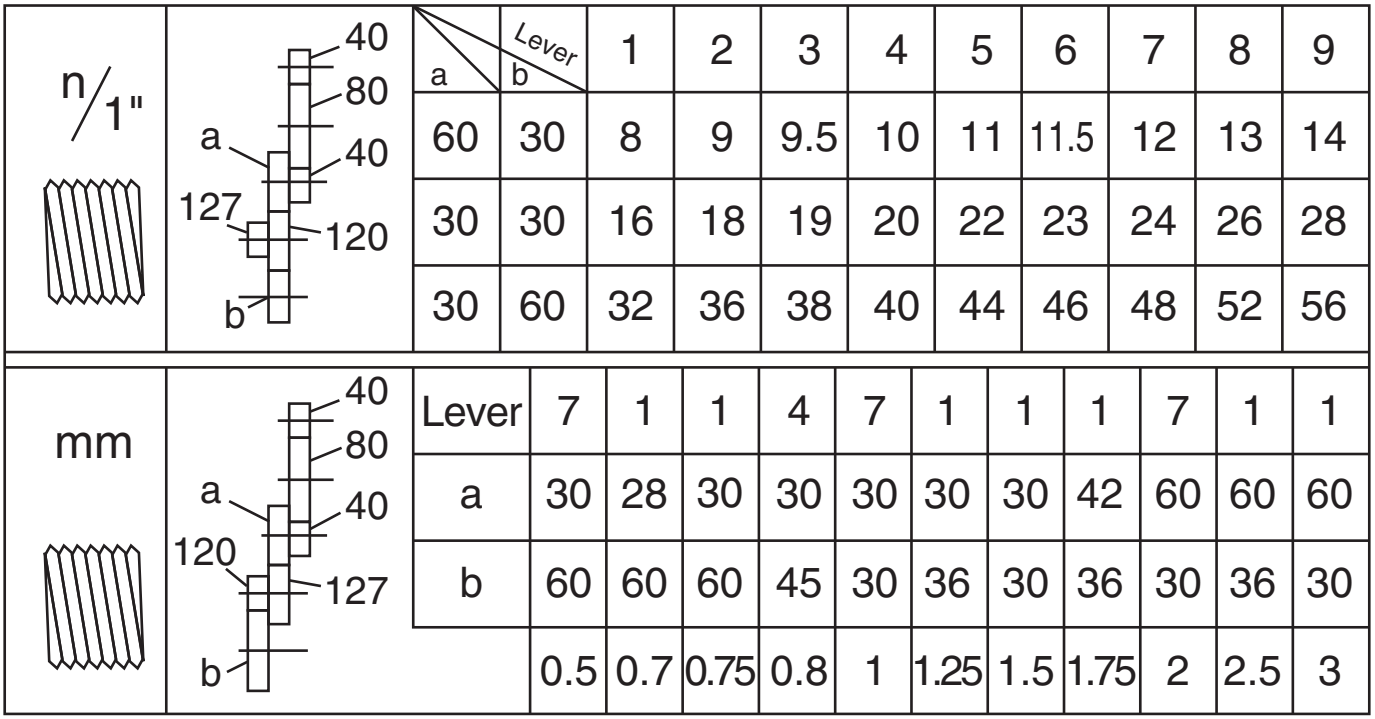


Figure 60. Model G4000 threading charts.

SECTION 5: ACCESSORIES

⚠WARNING

Some aftermarket accessories can be installed on this machine that could cause it to function improperly, increasing the risk of serious personal injury. To minimize this risk, only install accessories recommended for this machine by Grizzly.

NOTICE

Refer to the newest copy of the Grizzly Catalog for other accessories available for this machine.

Call 1-800-523-4777 To Order

SB1365—South Bend Lathe Way Oil, 12 oz.
T23962—ISO 68 Moly-D Machine Oil, 5 gal.
T23963—ISO 32 Moly-D Machine Oil, 5 gal.
Moly-D oils are some of the best we've found for maintaining the critical components of machinery because they tend to resist run-off and maintain their lubricity under a variety of conditions—as well as reduce chatter or slip. Buy in bulk and save with 5-gallon quantities.

Figure 61. 12 oz. way oil & 5 gallon machine oil.

G1075—52-PC. Clamping Kit
All the blocks, bolts, nuts, and hold-downs are case hardened. This clamping kit includes: 24 studs, 6 step block pairs, 6 T-nuts, 5 flange nuts, 4 coupling nuts, and 6 end hold-downs. The rack can be bolted to the wall or side of the machine for easy access. Features ½" T-Nuts & ⅜" bolts.

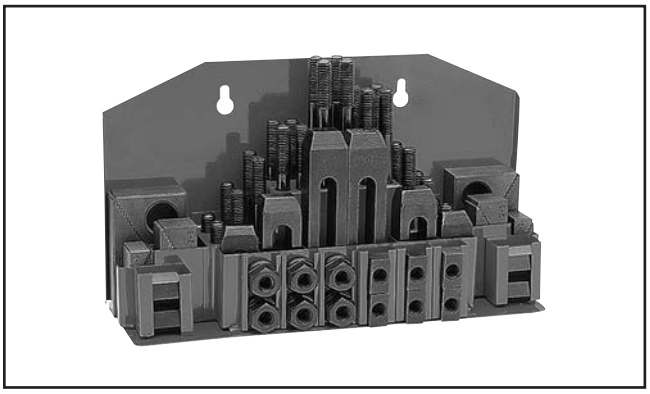


Figure 62. G1075 52-PC. Clamping Kit.

H7724—60" Birch Workbench w/Drawers
When organized storage is every bit as important as a stable work surface, this workbench is just what you need. Includes six drawers with ball bearing slides and two lower compartments. The end vise also includes two bench dogs. Specifications: 2¾" top edge thickness; 60"W x 20"D x 34"H; 148 lbs. approximate shipping weight.

Figure 63. H7724 60" Birch Workbench with Drawers.

G9610—Test Indicator
0.03" Range/0.001" Resolution
G9611—Test Indicator
0.008" Range/0.0001" Resolution
G9612—Test Indicator
0.030" Range/0.0005" Resolution

These test indicators have an easy to read dial and a pivoting stylus that moves at right angles to the dial face.

Figure 64. Test Indicator.

H7975—Digital Caliper w/ABS 6"
H7976—Digital Caliper w/ABS 8"
This Digital Caliper features absolute and relative measurements, hardened stainless steel construction, inch/metric conversion, lock knob, zero reset, data part and battery life indicator. Inch/metric resolution is 0.005mm/0.0002". Comes in a fitted foam-lined plastic case and includes a spare battery.

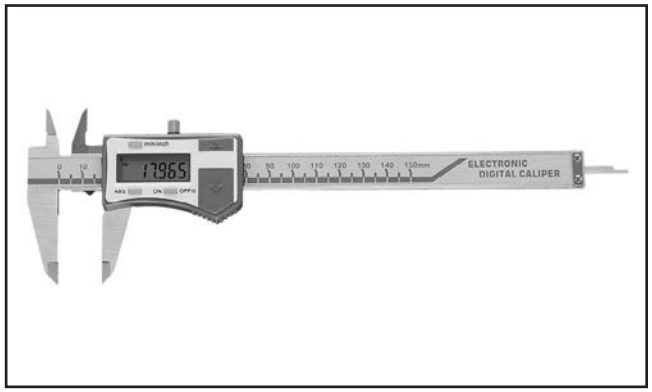


Figure 65. H7975/H7976 Digital Caliper w/ABS.

T10118—Mini Digital Readout Kit
Here's the slickest setup for managing the depth of cut with your tailstock! Just set up, touch off and zero out! You're going to know the exact position of the tool. Both the scale display and remote display come with a 0.0005" (five ten-thousandths of an inch) resolution, inch or millimeter display, zero keys and ON/OFF keys. The scale has an 8" range and its display features ABS or INC mode as well as a Hold key. Both displays read independently of each other, too! You'll be able to see your depth at a glance with the large, 1/2" character remote display. The 6' data cable is long enough to mount the remote display in almost any convenient location.

Figure 66. T10118 Mini Digital Readout Kit

G1069—MT#2 Live Center Set
A super blend of quality and convenience, this live center set offers seven interchangeable tips. High-quality needle bearings prolong tool life and special tool steel body and tips are precision ground. Supplied in wooden box.

Figure 67. G1069 Live Center Set.

G9318—MT#2 Tailstock Turret
This precision Tailstock Turret will save you time and money. With six tool sockets, you can quickly change from one machining operation to the next within seconds!

Figure 68. G9318 MT#2 Tailstock Turret.

20-Pc. Carbide Tipped Tool Bit Sets
G9775—¼"
G9776—⅜"
G9777—½"
An exceptional value for carbide lathe tool bits! Twenty piece sets offer tremendous savings over bits sold individually. Includes ten C-2 grade bits and ten C-6 grade bits for cutting steel and alloys.

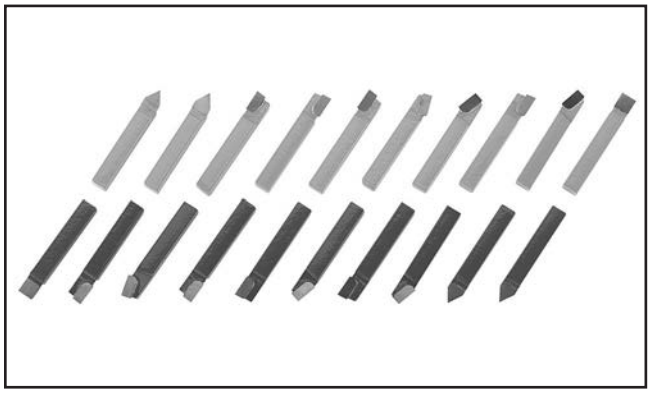


Figure 69. 20-Pc. Carbide Tipped Tool Bit Sets.

H2670—HSS Square Tool Bits
Our ground tool bits are M-2 HSS, making them some of the most durable tool bits around. Make your own specialized cutters in any shape using a silicon carbide grinding wheel (G8235-37) on your grinder.

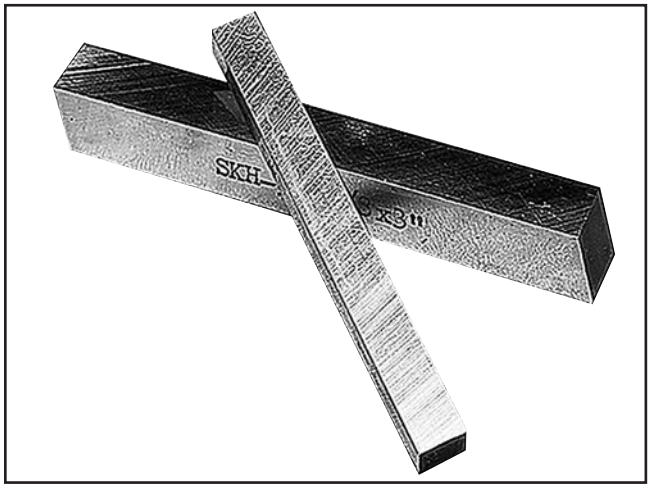


Figure 70. H2670 HSS Square Tool Bits.

order online at www.grizzly.com or call 1-800-523-4777

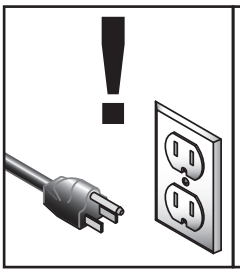
Glanze 7-Pc. Insert Turning Tool Sets
H5680—5/16"
H5681—12mm
H5682—Carbide Inserts Package of 10
Here's a precision set for precision turning. These tools have been machined to exacting specifications and feature rugged tool steel bodies with black oxide finish. They all use the same carbide inserts that are indexable to use all four faces. Supplied in a fitted case.

Figure 71. Glance 7-Pc. Insert Turning Tool Sets.

H5936—2 Pc. Knurling Tool Set
This 2 piece set includes a ½" x 4" Single Knurling Toolholder and a ½" x 4½" Double Knurling Toolholder with Pivoting Head. Both have a black oxide finish.

Figure 72. H5936 2 Pc. Knurling Tool Set.

SECTION 6: MAINTENANCE



⚠WARNING

To reduce risk of shock or accidental startup, always disconnect machine from power before adjustments, maintenance, or service.

Schedule

For optimum performance from your machine, follow this maintenance schedule and refer to any specific instructions given in this section.

Note: *This maintenance schedule is based on average daily usage. Adjust the maintenance schedule to match your usage to keep your lathe running smoothly and to protect your investment.*

Daily Check:
- Loose mounting bolts.
- Damaged or worn belts.
- Worn or damaged wires.
- Any other unsafe condition.

Every 6–8 Hours of Operation:
- Clean the machine.
- Daily lubrication procedures.

Cleaning & Protecting

Cleaning the Model G4000 is relatively easy. Vacuum excess metal chips, then wipe off built-up grime. Protect the unpainted metal surfaces with regular applications of Way Oil (refer to **ACCESSORIES** on **Page 43**).

Lubrication

Your lathe has numerous metal-to-metal moving parts that require proper lubrication to help ensure efficient and long-lasting operation.

Other than the lubrication points covered in this section, all other bearings are internally lubricated and sealed at the factory. Simple leave them alone unless they need to be replaced.

DISCONNECT THE LATHE FROM POWER BEFORE PERFORMING LUBRICATION!

Make copies of **Pages 48–49** and check off the correct boxes in the chart of **Figure 77** to keep track of the daily lubrication procedures. Follow the same sequence of lubrication each day to help ensure all locations are lubricated.

For ball oilers, wipe them clean, then depress the ball with the tip of the oil bottle filled with ISO 32 oil (or equivalent) and squirt once. For other components, thoroughly clean them with a shop rag and mineral spirits, then use a clean rag or brush to apply a thin coat of lubricant (we recommend a good quality way oil).

NOTICE

When lubricating the ball oilers inside the change gear cover, DO NOT allow any lubricant to contact the belts or pulleys. If lubricant does get on these parts, thoroughly clean the pulleys and replace the belts with new ones before continuing operations.

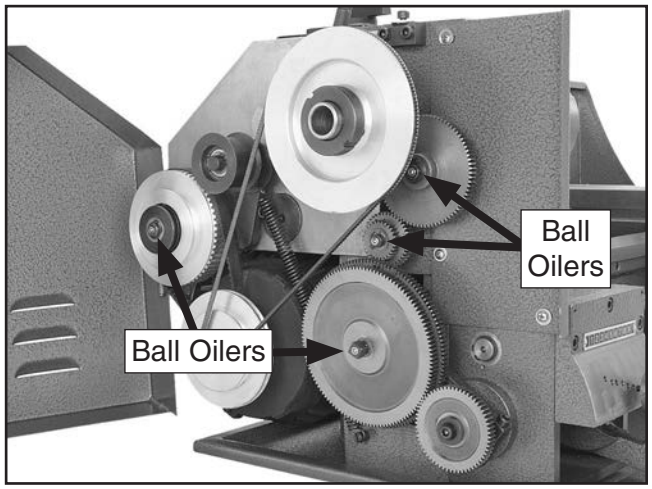


Figure 73. Ball oilers inside the change gear cover.

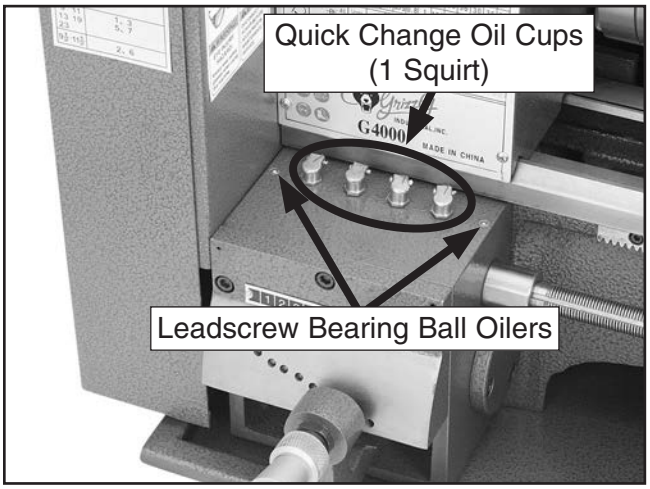


Figure 75. Leadscrew bearing ball oilers and quick change gear oil cups.

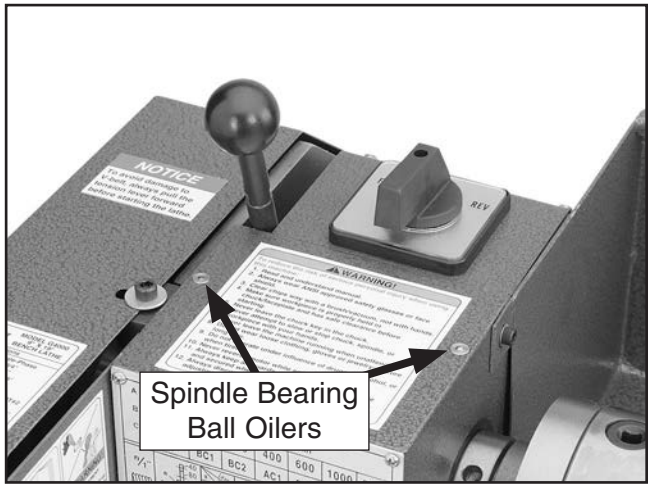


Figure 74. Spindle bearing ball oilers.

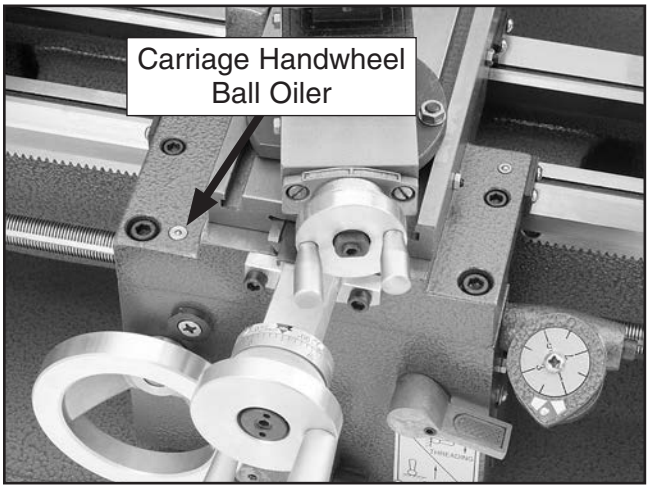


Figure 76. Carriage handwheel ball oiler.

Daily Lubrication Chart

Machine Area	Lubricant	Figure No.	No. of Fittngs	Days						
				Mon	Tue	Wed	Thu	Fri	Sat	Sun
Change Gears	ISO 32 Oil	**73**	4							
Spindle Bearings	ISO 32 Oil	**74**	2							
Leadscrew Bearings	ISO 32 Oil	**75**	2							
Quick Change Cups	ISO 68/Way Oil	**75**	4							
Carriage Handwheel	ISO 32 Oil	**76**	1							
Apron	ISO 32 Oil	**78**	3							
Tailstock	ISO 32 Oil	**79**	1							
Leadscrew Bushing	ISO 32 Oil	**80**	1							
Rack	ISO 68/Way Oil	**81**	Length							
Leadscrew Threads	ISO 68/Way Oil	**81**	Length							
Bedways	ISO 68/Way Oil	**81**	Length							

Figure 77. Daily lubrication chart.

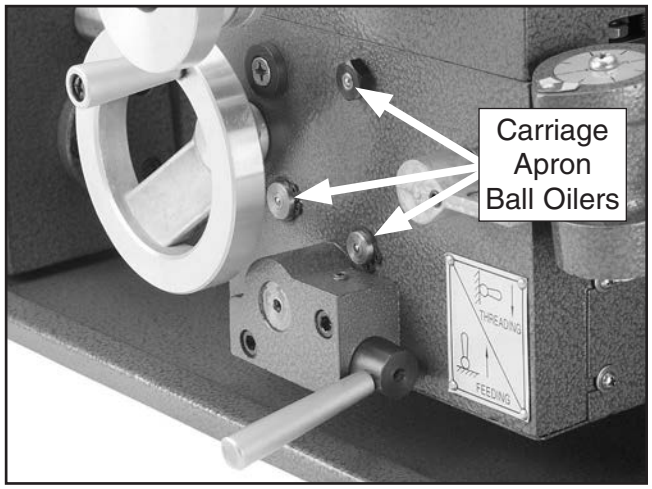


Figure 78. Carriage apron ball oilers.

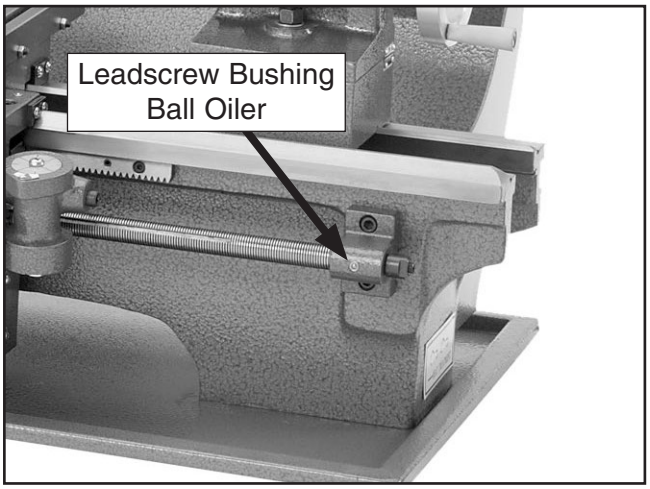


Figure 80. Leadscrew bushing block ball oiler.

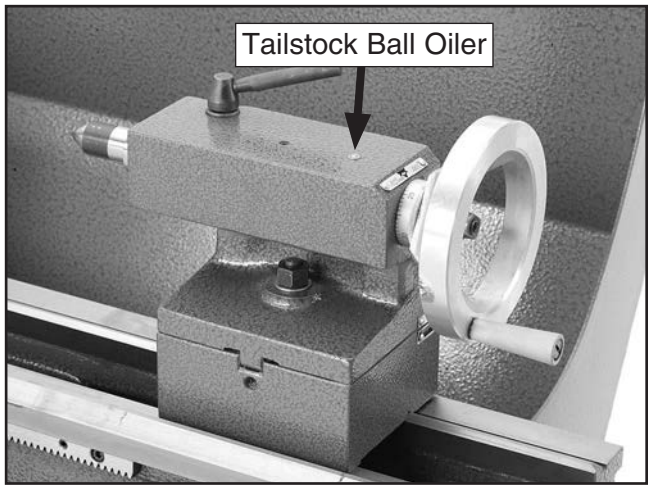


Figure 79. Tailstock ball oiler.

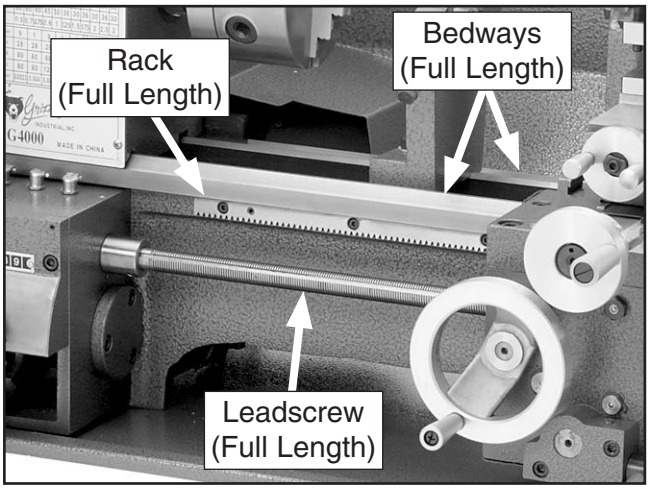


Figure 81. Rack, leadscrew and bedways.

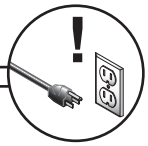
NOTICE

Failure to followed reasonable lubrication practices as instructed in this manual for your lathe could lead to premature failure of your lathe and will void the warranty.

SECTION 7: SERVICE

Review the troubleshooting and procedures in this section if a problem develops with your machine. If you need replacement parts or additional help with a procedure, call our Technical Support. **Note:** *Please gather the serial number and manufacture date of your machine before calling.*

Troubleshooting



Motor & Electrical

Symptom	Possible Cause	Possible Solution
Machine does not start or a breaker trips.	1. Power supply switched OFF or at fault. 2. Plug/receptacle at fault/wired wrong. 3. Motor connection wired wrong. 4. Wall circuit breaker tripped. 5. Wiring open/has high resistance. 6. Spindle switch at fault. 7. Start capacitor at fault. 8. Centrifugal switch at fault. 9. Motor at fault.	1. Ensure power supply is on/has correct voltage. 2. Test for good contacts; correct the wiring. 3. Correct motor wiring connections (**Page 55**). 4. Ensure circuit size is correct/replace weak breaker. 5. Check/fix broken, disconnected, or corroded wires. 6. Replace switch. 7. Test/replace if faulty. 8. Adjust/replace centrifugal switch. 9. Test/repair/replace.
Machine stalls or is underpowered.	1. Feed rate/cutting speed too fast. 2. Wrong workpiece material. 3. Belt(s) slipping. 4. Motor wired incorrectly. 5. Plug/receptacle at fault. 6. Pulley slipping on shaft. 7. Motor bearings at fault. 8. Machine undersized for task. 9. Motor overheated. 10. Spindle rotation switch at fault. 11. Run capacitor at fault. 12. Motor at fault. 13. Centrifugal switch at fault.	1. Decrease feed rate/cutting speed. 2. Use correct type/size of metal. 3. Tension/replace belt(s); ensure pulleys are aligned. 4. Wire motor correctly (**Page 55**). 5. Test for good contacts/correct wiring. 6. Replace loose pulley/shaft. 7. Test/repair/replace. 8. Use sharp tools at correct angle; reduce feed rate/depth of cut; use cutting fluid if possible. 9. Clean motor, let cool, and reduce workload. 10. Test/replace switch. 11. Test/repair/replace. 12. Test/repair/replace. 13. Adjust/replace centrifugal switch if available.
Machine has vibration or noisy operation.	1. Workpiece not held firmly in chuck/faceplate. 2. Motor or component loose. 3. Spindle belt worn or loose. 4. Pulley loose. 5. Incorrectly mounted to workbench. 6. Motor fan rubbing on fan cover. 7. Bit chattering. 8. Workpiece or chuck at fault. 9. Motor bearings at fault. 10. Centrifugal switch. 11. Quick change gears at fault.	1. Correctly secure workpiece in chuck/faceplate. 2. Inspect/replace damaged bolts/nuts, and re-tighten with thread locking fluid. 3. Inspect/replace belts. 4. Realign/replace shaft, pulley, set screw, and key. 5. Adjust feet, shim, or tighten mounting hardware. 6. Fix/replace fan cover; replace loose/damaged fan. 7. Replace/sharpen bit; index bit to workpiece; use correct feed rate and spindle speed. 8. Center workpiece in chuck or face plate; replace defective chuck. 9. Test by rotating shaft, replace if grinding. 10. Replace switch. 11. Replace bad gear(s)/bearing(s).

Operations

Symptom	Possible Cause	Possible Solution
Bad surface finish.	1. Incorrect spindle speed or feed rate. 2. Dull tool or poor tool selection. 3. Too much play in gibs. 4. Tool too high.	1. Adjust for proper spindle speed and feed rate (**Page 32**). 2. Use sharp tools; use correct tool for the operation. 3. Adjust gibs (**Page 52**). 4. Lower tool position.
Cannot remove tapered tool from tailstock quill.	1. Quill not retracted all the way back into the tailstock. 2. Debris/oil not removed from tapered mating surfaces before inserting into quill.	1. Rotate the quill handwheel until the tapered tool is forced out of quill. 2. Always make sure that tapered mating surfaces are clean before inserting.
Gear(s) will not line up and mesh.	1. Gear(s) not aligned.	1. Rotate spindle by hand until gear(s) falls into place.
Cutting tool or machine components vibrate excessively during cutting.	1. Tool holder not tight enough. 2. Cutting tool too far out from holder; lack of support. 3. Too much play in gibs. 4. Cutting tool is dull. 5. Incorrect spindle speed or feed rate.	1. Check for debris, clean, and re-tighten. 2. Re-install cutting tool with no more than ⅓ of total length is sticking out of tool holder. 3. Adjust gibs (**Page 52**). 4. Sharpen/replace. 5. Adjust for proper spindle speed and feed rate (**Page 32**).
Cross/compound slide or carriage feed has sloppy operation.	1. Too much play in gibs. 2. Handwheel(s) loose. 3. Too much leadscrew backlash (cross slide only). 4. Leadscrew mechanism worn or out of adjustment.	1. Adjust gibs (**Page 52**). 2. Tighten handwheel fasteners. 3. Adjust leadscrew backlash (**Page 53**). 4. Tighten any loose fasteners on leadscrew mechanisms; check for excessive wear/replace if necessary.
Cross/compound slide or carriage feed hard to move.	1. Gibs are loaded up with chips/grime. 2. Gibs are too tight. 3. Leadscrew backlash setting too tight (cross slide only). 4. Bedways are dirty/dry. 5. Gearing is at fault.	1. Remove gibs, clean ways, lubricate, and properly adjust gibs (**Page 52**). 2. Adjust gibs (**Page 52**). 3. Properly adjust cross slide leadscrew backlash (**Page 53**). 4. Clean and lubricate bedways. 5. Inspect/replace gearing.
Inaccurate turning results from one end of workpiece to the other.	1. Tailstock not properly aligned with headstock.	1. Properly align tailstock with headstock (**Page 27**).
Chuck jaws will not move or do not move easily.	1. Chips/debris lodged in jaws.	1. Remove jaws, clean and lubricate jaws, scroll-gear threads, and chuck, then replace jaws.
Tailstock quill will not feed out of tailstock.	1. Quill lock is tightened down.	1. Turn quill lock counterclockwise to loosen.

Adjusting Gibs

The gibs that affect the accuracy of the carriage, cross slide, and compound slide movements along their ways can be adjusted. The carriage uses a gib clamp located on the rear of the carriage saddle, and the cross slide and compound slide use a wedge-shaped gib sandwiched between the component base and the way.

The goal of gib adjustment is to remove unnecessary sloppiness without causing the ways to bind. Tight gibs make the movements more accurate, but harder to perform. Loose gibs make the movements sloppy, but easier to perform.

Tools Needed	Qty
Wrench 7mm	1
Standard Screwdriver #1	1

Cross Slide & Compound Slide Gibs

1. DISCONNECT LATHE FROM POWER!

2. Loosen the three hex nuts on the side of the device (see **Figures 82–83**).

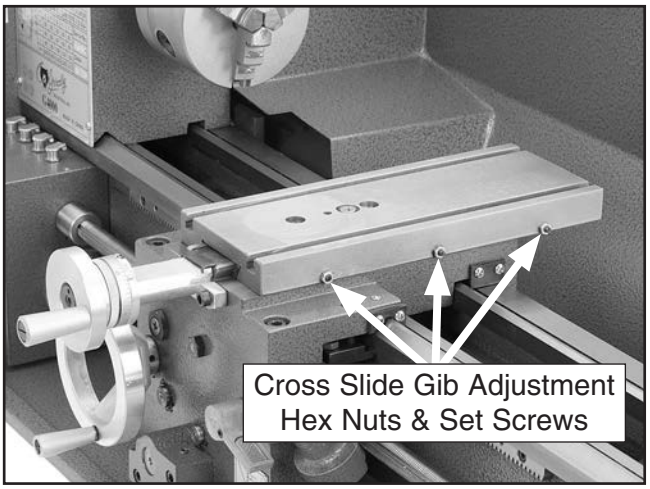


Figure 82. Cross slide gib adjustment hex nuts and set screws.

NOTICE

Excessively loose gibs may cause poor workpiece finishes, and may cause undue wear of sliding surfaces and ways. Excessively tight gibs may cause premature wear of the sliding devices.

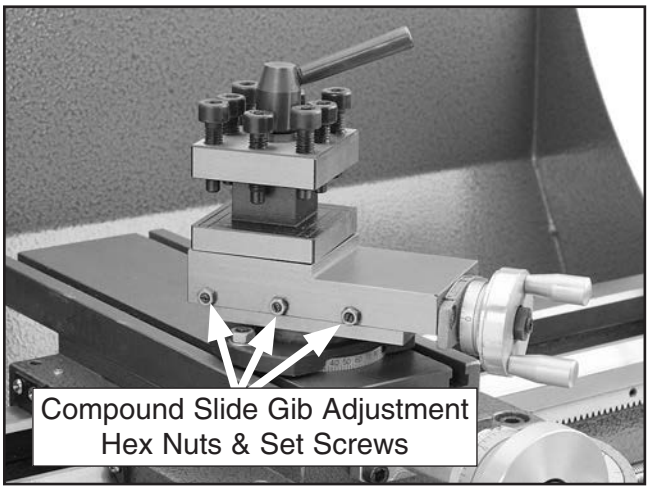


Figure 83. Compound slide gib adjustment hex nuts and set screws.

3. Loosen the set screws and move the device back-and-forth to make sure the gibs are loose, then tighten the set screws just until you feel resistance.

4. Move the device back-and-forth and loosen or tighten the set screws equally until you are satisfied with the gib adjustment, then, without moving the set screws, re-tighten the hex nuts to secure the setting.

Compound Slide Backlash

Backlash is the amount the handwheel turns in one direction before the slide begins to move.

Note: *When adjusting backlash, keep in mind the goal is to remove excess backlash without binding the movement of the slide. Overtightening will cause excessive wear to the cross slide leadscrew and nut.*

Tools Needed	Qty
Wrench 10mm	1
Phillips Screwdriver #2	1

To adjust the cross slide backlash:

1. DISCONNECT LATHE FROM POWER!

2. Remove the compound slide from the cross slide, then loosen or tighten the adjustment screw shown in **Figure 84** until you are satisfied with the amount of backlash.

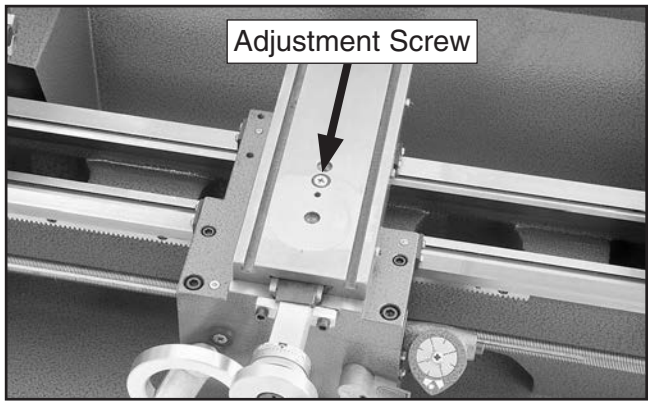


Figure 84. Cross slide backlash adjustment screw.

Adjusting Half-Nut

The leadscrew half-nut should engage the leadscrew firmly without tilting from side-to-side during operation. With normal wear over an extended period of use, adjustment of the half-nut guide bar may be necessary. The goal of adjusting the half-nut guide bar is to remove excessive play so that the half-nut easily and firmly engages the leadscrew, but will not tilt from side-to-side when engaged with the leadscrew for threading operations.

Tools Needed	Qty
Hex Wrench 5mm	1
Wrench 7mm	1
Standard Screwdriver #1	1

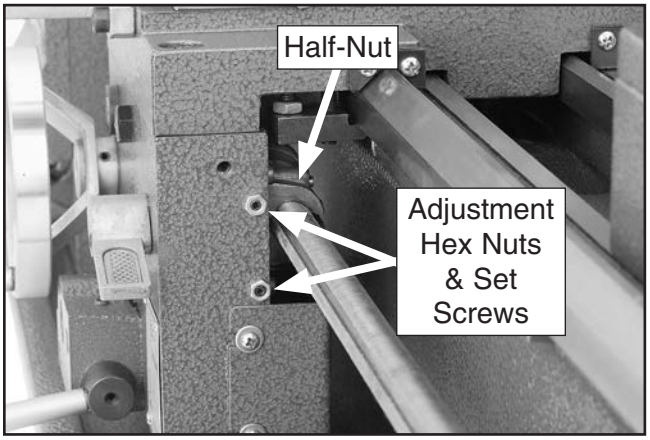


Figure 85. Half-nut adjustment components.

To adjust the half-nut guide bar:

1. DISCONNECT LATHE FROM POWER!

2. Remove the thread dial assembly.

3. Loosen the two adjustment hex nuts shown in **Figure 85**, then adjust the set screws in small increments.

4. Engage the half-nut with the leadscrew and rock the carriage back-and-forth with the handwheel.

5. Repeat **Steps 3–4** until you are satisfied with the adjustment, then without moving the set screws, re-tighten the hex nuts and re-install the thread dial assembly.

SECTION 8: WIRING

These pages are current at the time of printing. However, in the spirit of improvement, we may make changes to the electrical systems of future machines. Compare the manufacture date of your machine to the one stated in this manual, and study this section carefully.

If there are differences between your machine and what is shown in this section, call Technical Support at (570) 546-9663 for assistance BEFORE making any changes to the wiring on your machine. An updated wiring diagram may be available. **Note:** *Please gather the serial number and manufacture date of your machine before calling. This information can be found on the main machine label.*

⚠WARNING
Wiring Safety Instructions

SHOCK HAZARD. Working on wiring that is connected to a power source is extremely dangerous. Touching electrified parts will result in personal injury including but not limited to severe burns, electrocution, or death. Disconnect the power from the machine before servicing electrical components!

MODIFICATIONS. Modifying the wiring beyond what is shown in the diagram may lead to unpredictable results, including serious injury or fire. This includes the installation of unapproved aftermarket parts.

WIRE CONNECTIONS. All connections must be tight to prevent wires from loosening during machine operation. Double-check all wires disconnected or connected during any wiring task to ensure tight connections.

CIRCUIT REQUIREMENTS. You MUST follow the requirements at the beginning of this manual when connecting your machine to a power source.

WIRE/COMPONENT DAMAGE. Damaged wires or components increase the risk of serious personal injury, fire, or machine damage. If you notice that any wires or components are damaged while performing a wiring task, replace those wires or components.

MOTOR WIRING. The motor wiring shown in these diagrams is current at the time of printing but may not match your machine. If you find this to be the case, use the wiring diagram inside the motor junction box.

CAPACITORS/INVERTERS. Some capacitors and power inverters store an electrical charge for up to 10 minutes after being disconnected from the power source. To reduce the risk of being shocked, wait at least this long before working on capacitors.

EXPERIENCING DIFFICULTIES. If you are experiencing difficulties understanding the information included in this section, contact our Technical Support at (570) 546-9663.

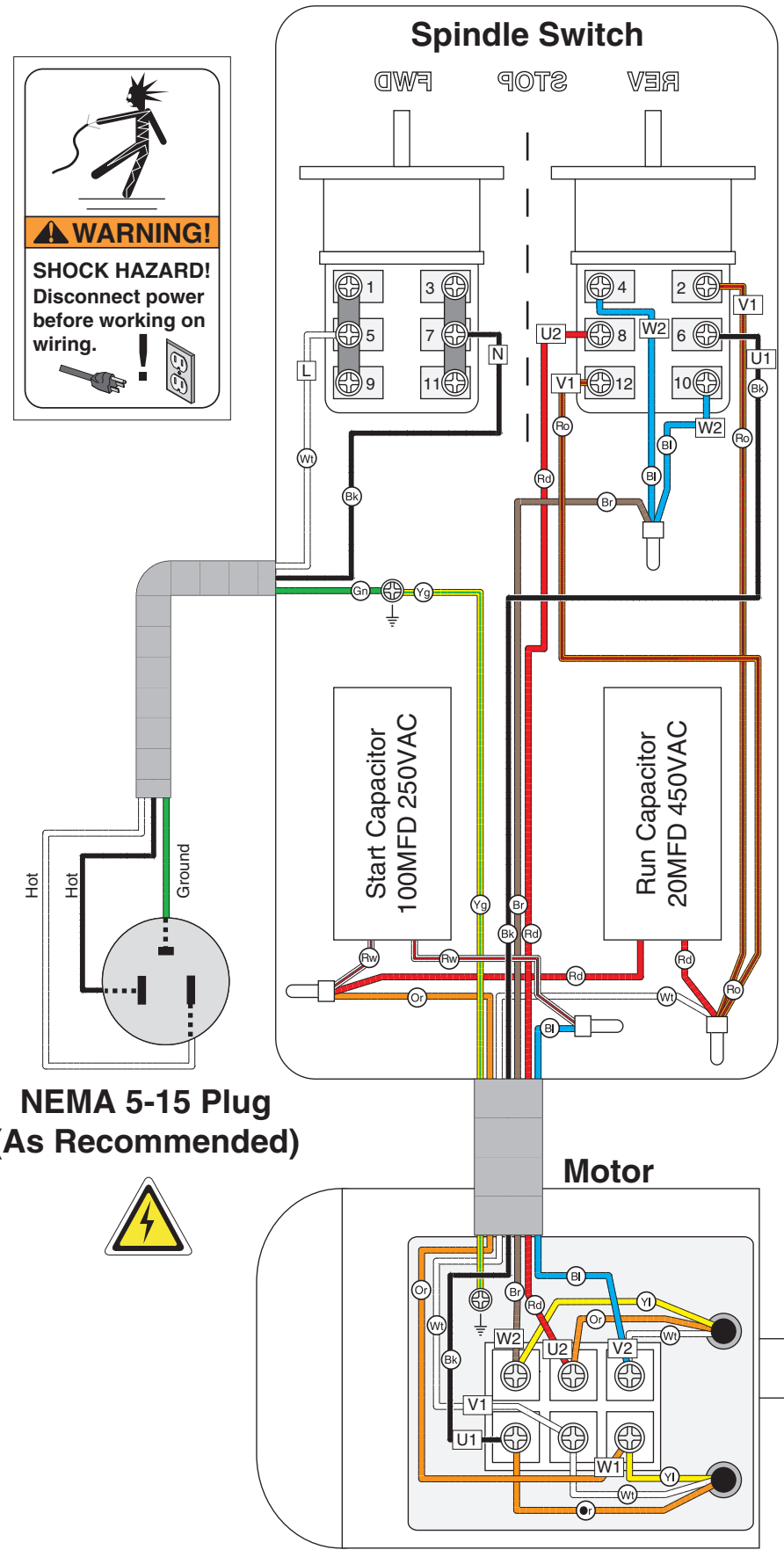
NOTICE

The photos and diagrams included in this section are best viewed in color. You can view these pages in color at www.grizzly.com.

COLOR KEY

BLACK	Bk	BLUE	Bl	YELLOW	Yl	LIGHT BLUE	Lb
WHITE	Wt	BROWN	Br	YELLOW GREEN	Yg	BLUE WHITE	Bw
GREEN	Gn	GRAY	Gy	PURPLE	Pu	TURQUOISE	Tu
RED	Rd	ORANGE	Or	PINK	Pk		

Wiring Diagram



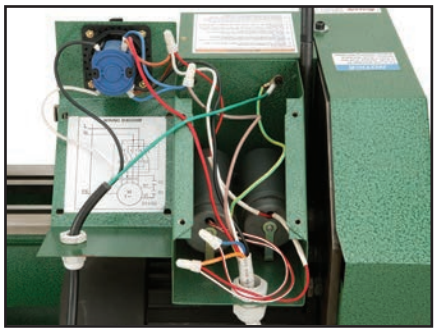
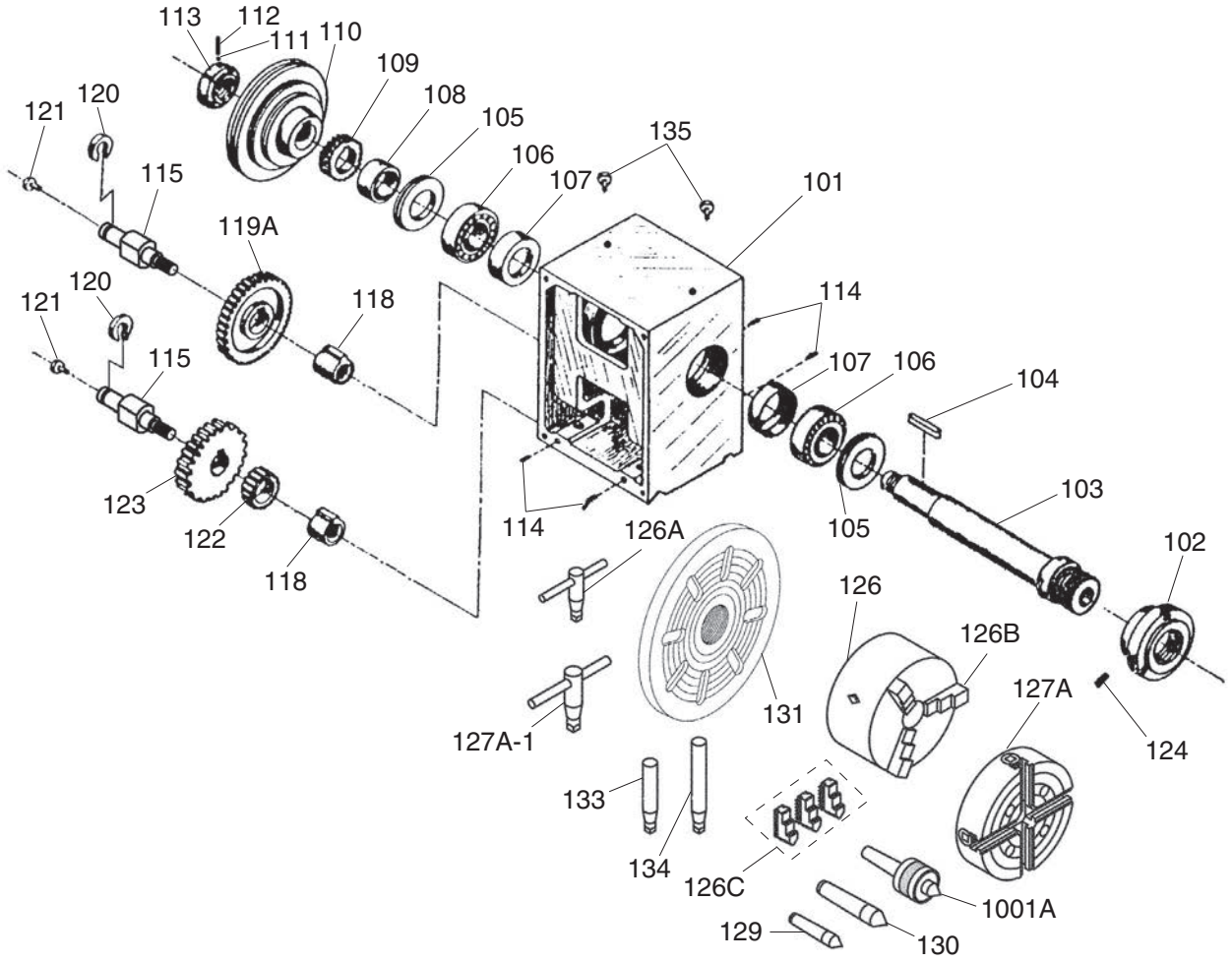


Figure 86. Electrical box wiring.

Figure 87. Motor wiring.

SECTION 9: PARTS

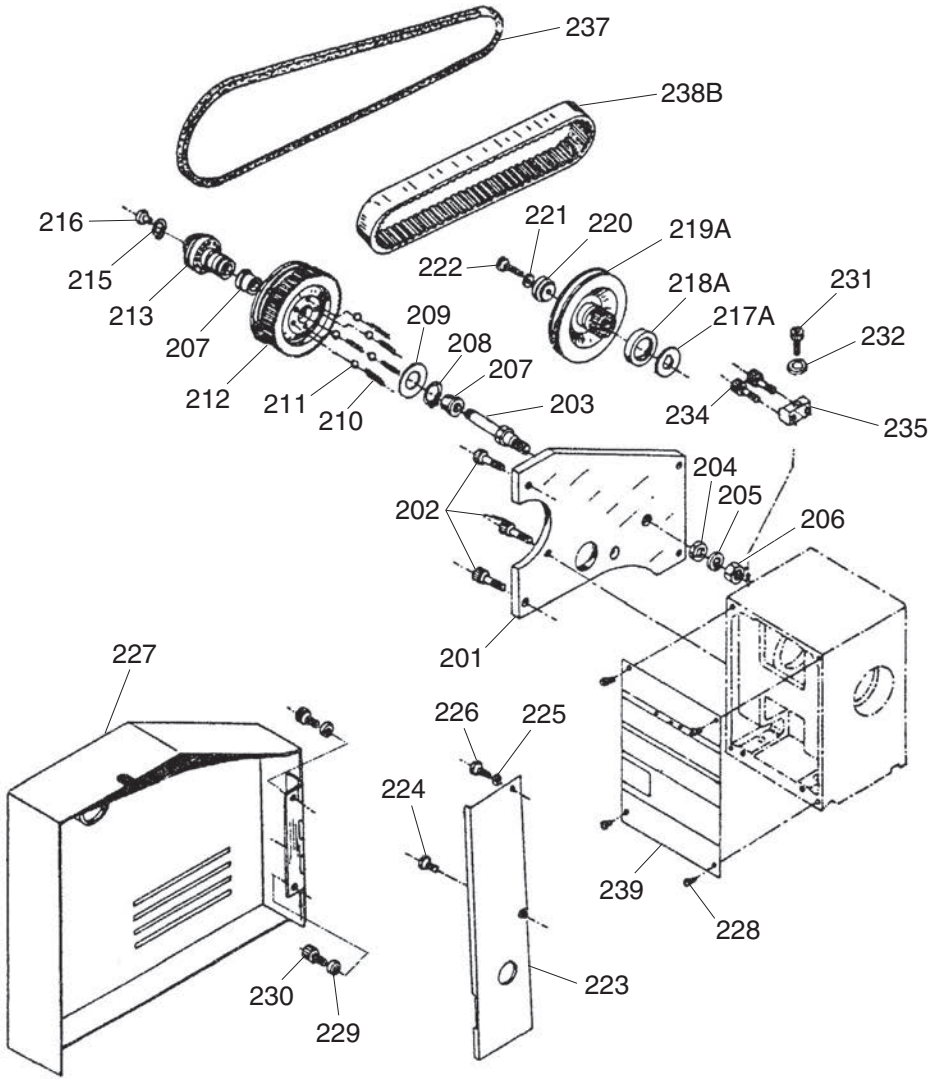
Headstock



REF	PART #	DESCRIPTION
101	P4000101	HEADSTOCK CASTING
102	P4000102	3-JAW CHUCK BACK PLATE
103	P4000103	SPINDLE
104	P4000104	SPINDLE SHAFT KEY
105	P4000105	GASKET
106	P4000106	TAPERED BEARING 32007
107	P4000107	BEARING CAP
108	P4000108	SPACER
109	P4000109	GEAR 40T X 30MM
110	P4000110	SPINDLE PULLEY
111	P4000111	STEEL BALL
112	P4000112	SET SCREW M4-.7 X 5
113	P4000113	THREADED LOCK COLLAR
114	P4000114	SET SCREW M4-.7 X 10
115	P4000115	SHAFT
118	P4000118	KEYED BUSHING
119A	P4000119A	GEAR 80T METAL
120	P4000120	RETAINING CLIP

REF	PART #	DESCRIPTION
121	P4000121	OIL PORT 6MM
122	P4000122	GEAR 40T X 14MM
123	P4000123	GEAR 28T
124	P4000124	SET SCREW M6-1 X 10
126	P4000126	3-JAW CHUCK 4"
126A	P4000126A	3-JAW CHUCK KEY
126B	P4000126B	3-JAW REVERSE JAWS 3PC SET
126C	P4000126C	3-JAW INTERNAL 3-PC JAWS V2.03.07
127A	P4000127A	4-JAW CHUCK 7-1/4"
127A-1	P4000127A-1	4-JAW CHUCK KEY
129	P4000129	DEAD CENTER MT#2
130	P4000130	DEAD CENTER MT#3
131	P4000131	FACEPLATE 7-1/2"
133	P4000133	CHUCK BAR SHORT
134	P4000134	CHUCK BAR LONG
135	P4000135	BALL OILER 8MM PRESS-IN
1001A	P40001001A	LIVE CENTER MT#2

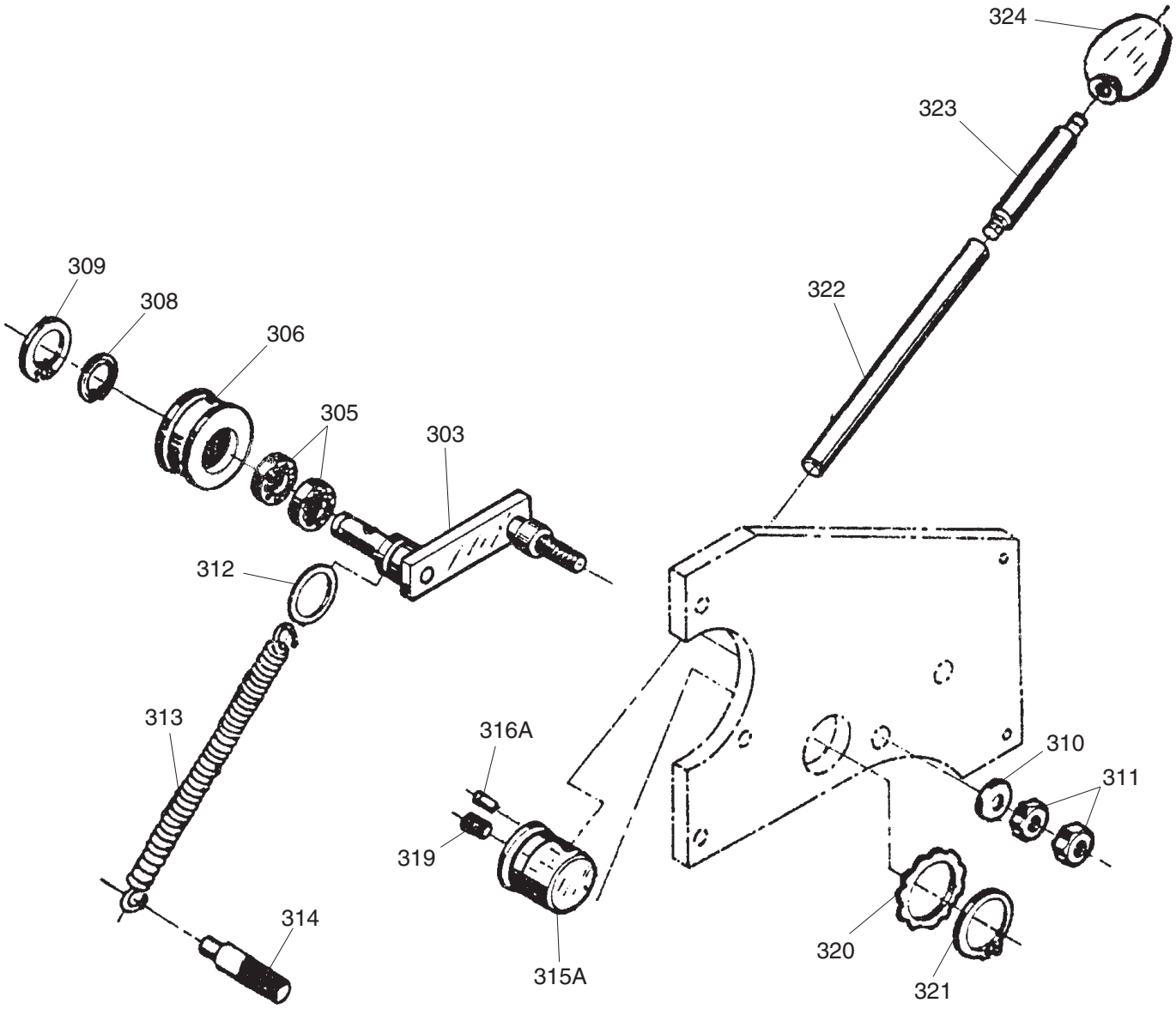
Drive Belt



REF	PART #	DESCRIPTION
201	P4000201	BRACKET PLATE
202	P4000202	CAP SCREW M5-.8 X 20
203	P4000203	IDLER PULLEY SHAFT
204	P4000204	FLAT WASHER 10MM
205	P4000205	LOCK WASHER 10MM
206	P4000206	HEX NUT M10-1.5
207	P4000207	BUSHING
208	P4000208	EXT RETAINING RING 25MM
209	P4000209	IDLER PULLEY WASHER
210	P4000210	COMPRESSION SPRING
211	P4000211	STEEL BALL
212	P4000212	IDLER PULLEY
213	P4000213	CLUTCH HUB
215	P4000215	EXT RETAINING RING 12MM
216	P4000216	OIL PORT
217A	P4000217A	SPACER - CHINA MOTOR
218A	P4000218A	COLLAR - CHINA MOTOR
219A	P4000219A	MOTOR PULLEY - CHINA MOTOR

REF	PART #	DESCRIPTION
220	P4000220	MOTOR PULLEY WASHER
221	P4000221	LOCK WASHER 6MM
222	P4000222	CAP SCREW M6-1 X 25
223	P4000223	COVER PLATE
224	P4000224	CAP SCREW M5-.8 X 12
225	P4000225	FLAT WASHER 5MM
226	P4000226	CAP SCREW M5-.8 X 8
227	P4000227	CHANGE GEAR COVER W/HINGE
228	P4000228	CAP SCREW M4-.7 X 10
229	P4000229	FLAT WASHER 6MM
230	P4000230	CAP SCREW M6-1 X 10
231	P4000231	CAP SCREW M6-1 X 25
232	P4000232	FLAT WASHER 6MM
234	P4000234	CAP SCREW M6-1 X 20
235	P4000235	CLAMP BLOCK
237	P4000237	V-BELT 5 X 710MM
238B	P4000238B	TOOTH BELT 170 X L050 CHINA
239	P4000239	CONFIGURATION PLATE

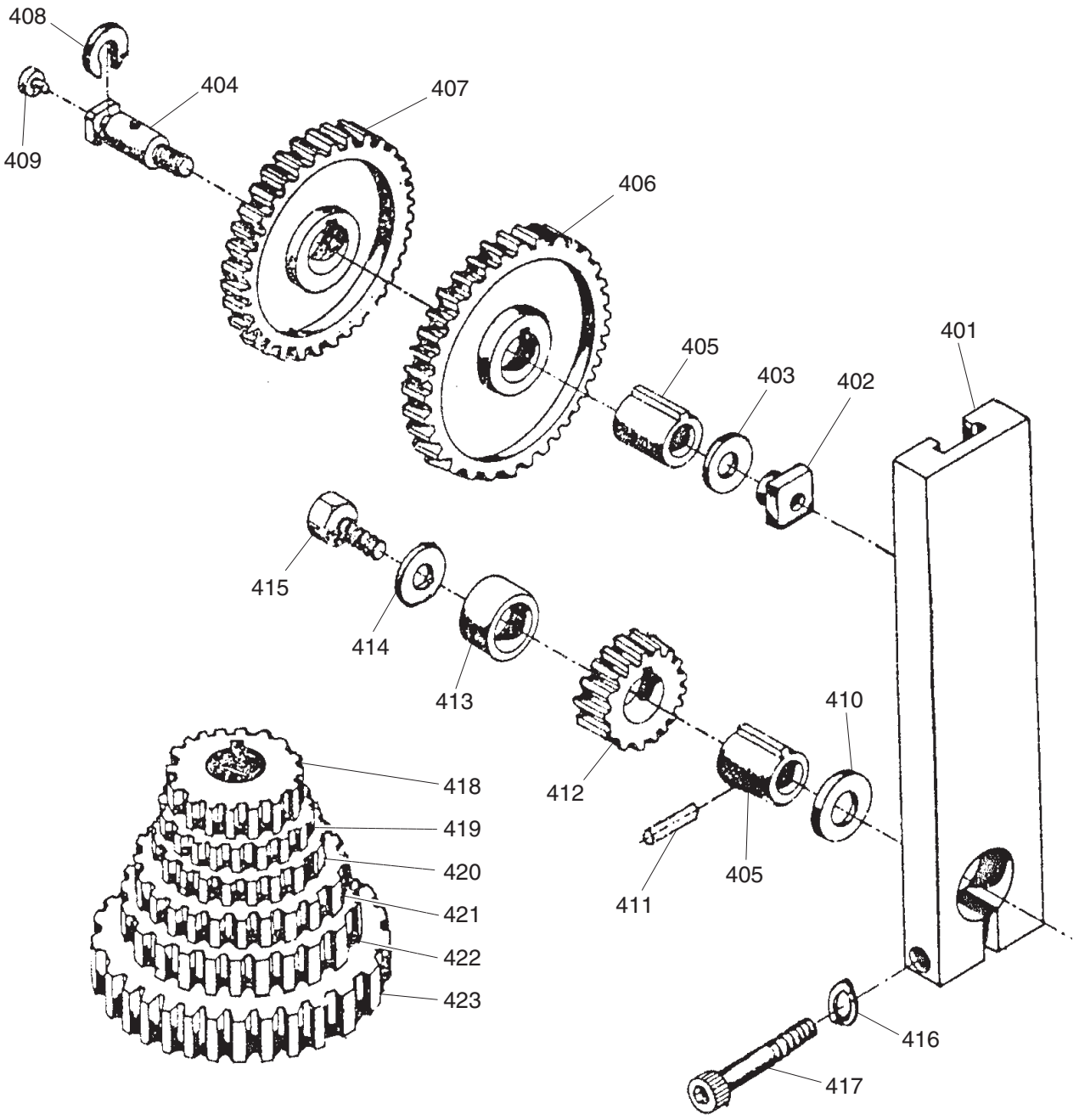
Belt Tension Lever



REF	PART #	DESCRIPTION
303	P4000303	LEVER BRACKET ASSEMBLY
305	P4000305	BALL BEARING 6001ZZ
306	P4000306	ROLLER
308	P4000308	EXT RETAINING RING 12MM
309	P4000309	INT RETAINING RING 28MM
310	P4000310	FLAT WASHER 10MM
311	P4000311	HEX NUT M10-1.5
312	P4000312	SPRING RING
313	P4000313	TENSION SPRING

REF	PART #	DESCRIPTION
314	P4000314	STUD BOLT
315A	P4000315A	TENSIONING CAM V2.08.07
316A	P4000316A	CAP SCREW M6-1 X 25
319	P4000319	SET SCREW M8-1.25 X 8
320	P4000320	WAVY WASHER
321	P4000321	EXT RETAINING RING 34MM
322	P4000322	BELT TENSION LEVER
323	P4000323	EXTENSION ROD
324	P4000324	KNOB

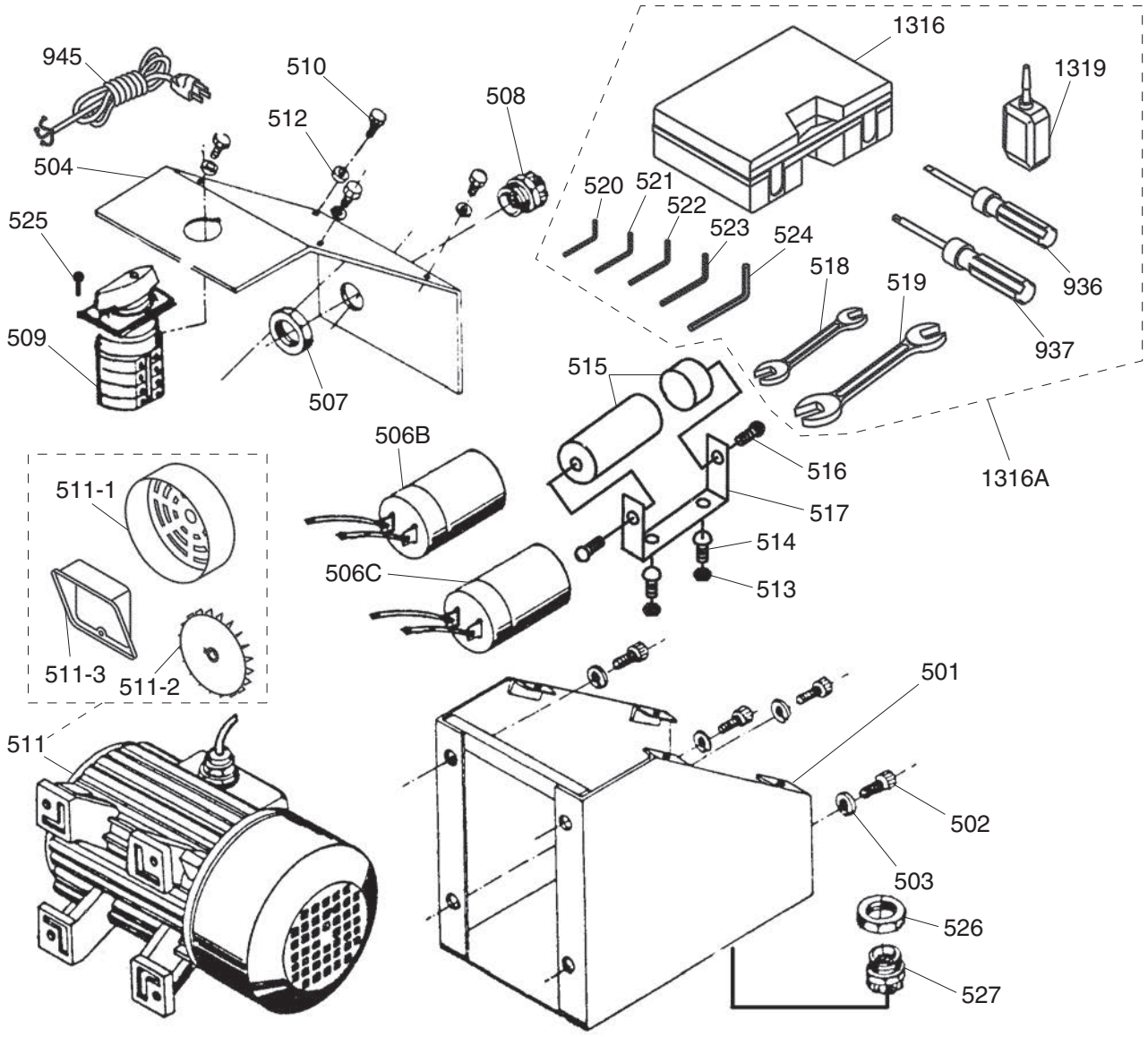
Change Gears



REF	PART #	DESCRIPTION
401	P4000401	BRACKET
402	P4000402	T-NUT M6-1
403	P4000403	FLAT WASHER 6MM
404	P4000404	SHAFT
405	P4000405	KEYED BUSHING
406	P4000406	GEAR 127T
407	P4000407	GEAR 120T
408	P4000408	SHAFT RETAINING CLIP
409	P4000409	OIL PORT 6MM
410	P4000410	FLAT WASHER 10MM
411	P4000411	ROLL PIN 4 X 14
412	P4000412	GEAR 30T

REF	PART #	DESCRIPTION
413	P4000413	SPACER
414	P4000414	FLAT WASHER 6MM
415	P4000415	CAP SCREW M6-1 X 10
416	P4000416	LOCK WASHER 6MM
417	P4000417	CAP SCREW M6-1 X 35
418	P4000418	GEAR 28T
419	P4000419	GEAR 36T
420	P4000420	GEAR 42T
421	P4000421	GEAR 45T
422	P4000422	GEAR 60T
423	P4000423	GEAR 80T

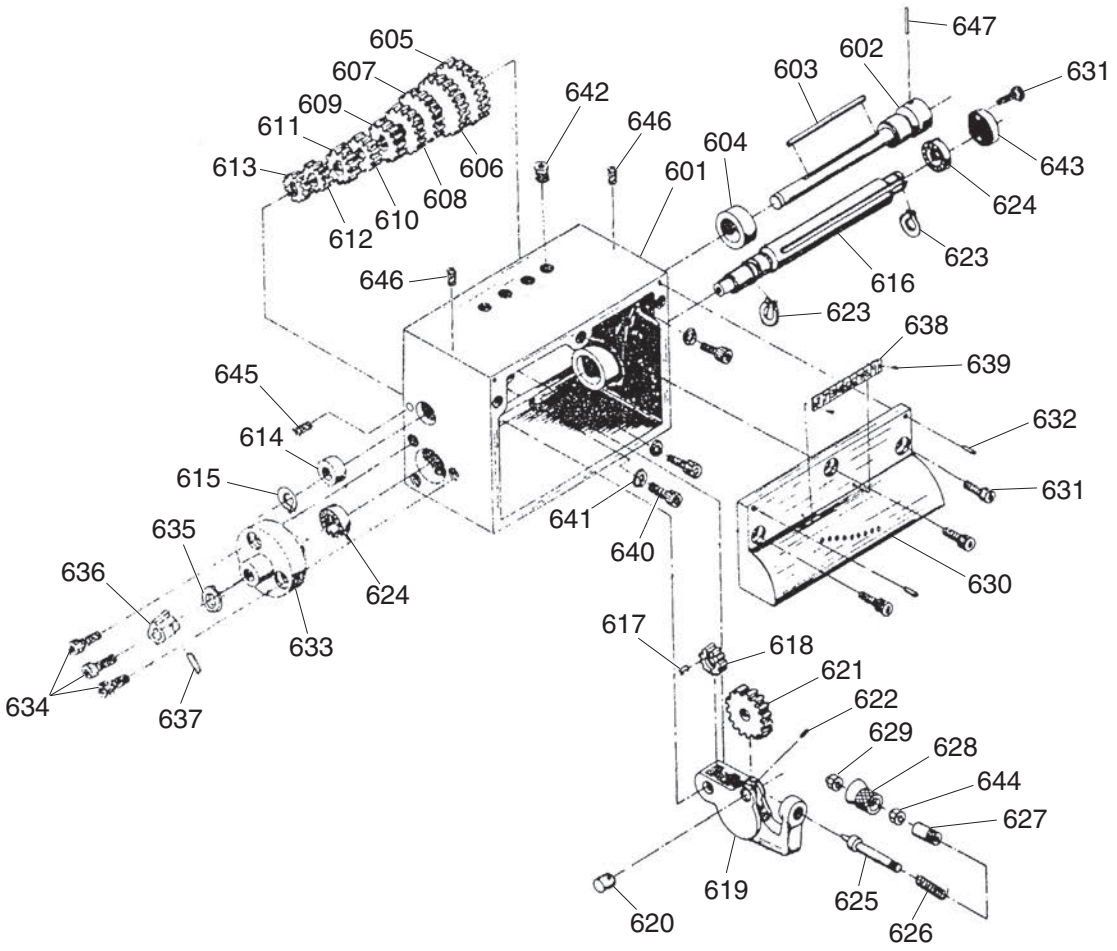
Electrical & Tools



REF	PART #	DESCRIPTION
501	P4000501	ELECTRICAL BOX
502	P4000502	CAP SCREW M5-.8 X 10
503	P4000503	LOCK WASHER 6MM
504	P4000504	ELECTRICAL BOX COVER
506B	P4000506B	R CAPACITOR 20M 400V 1-5/8 X 2-7/8
506C	P4000506C	S CAPACITOR 100M 250V 1-5/8 X 3-1/8
507	P4000507	STRAIN RELIEF NUT M16-1
508	P4000508	STRAIN RELIEF M16
509	P4000509	SPINDLE SWITCH
510	P4000510	PHLP HD SCR M5-.8 X 10
511	P4000511	MOTOR 3/4HP 110V 60HZ
511-1	P4000511-1	MOTOR FAN COVER
511-2	P4000511-2	MOTOR FAN
511-3	P4000511-3	TERMINAL COVER
512	P4000512	LOCK WASHER 5MM
513	P4000513	HEX NUT M4-.7
514	P4000514	PHLP HD SCR M4-.7 X 8
515	P4000515	CAPACITOR COVER W/CAP

REF	PART #	DESCRIPTION
516	P4000516	PHLP HD SCR M4-.7 X 6
517	P4000517	CAPACITOR CLIP
518	P4000518	WRENCH 8/10MM
519	P4000519	WRENCH 12/14MM
520	P4000520	HEX WRENCH 1.5MM
521	P4000521	HEX WRENCH 2MM
522	P4000522	HEX WRENCH 4MM
523	P4000523	HEX WRENCH 5MM
524	P4000524	HEX WRENCH 6MM
525	P4000525	PHLP HD SCR M4-.7 X 16
526	P4000526	STRAIN RELIEF NUT M24-1.5
527	P4000527	STRAIN RELIEF M24
936	P4000936	SCREWDRIVER FLAT #2
937	P4000937	SCREWDRIVER PHILLIPS #2
945	P4000945	POWER CORD 16/3/110V
1316	P40001316	TOOL BOX
1316A	P40001316A	COMPLETE TOOL BOX
1319	P40001319	OIL BOTTLE

Quick Change Gears

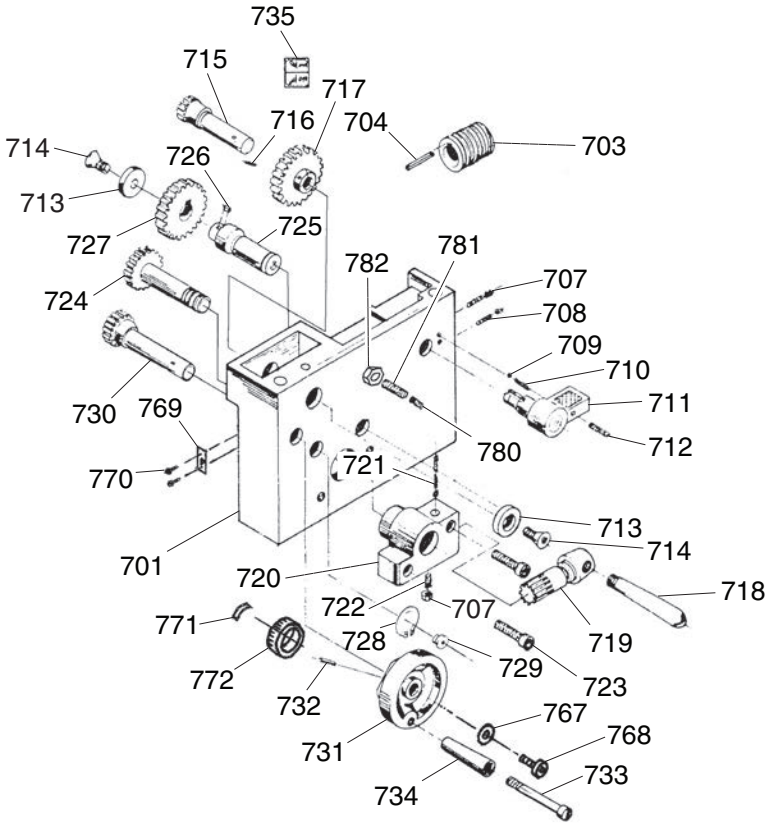


REF	PART #	DESCRIPTION
601	P4000601	GEARBOX CASTING
602	P4000602	SHAFT
603	P4000603	KEY 5 X 5 X 70
604	P4000604	BUSHING
605	P4000605	GEAR 28T
606	P4000606	GEAR 26T
607	P4000607	GEAR 24T
608	P4000608	GEAR 23T
609	P4000609	GEAR 22T
610	P4000610	GEAR 20T
611	P4000611	GEAR 19T
612	P4000612	GEAR 18T
613	P4000613	GEAR 16T
614	P4000614	BUSHING
615	P4000615	EXT RETAINING RING 16MM
616	P4000616	SHAFT
617	P4000617	KEY 5 X 5 X 12
618	P4000618	GEAR 16T
619	P4000619	SHIFT ARM
620	P4000620	SHAFT
621	P4000621	GEAR 36T
622	P4000622	SET SCREW M5-.8 X 10
623	P4000623	EXT RETAINING RING 15MM
624	P4000624	BALL BEARING 6202ZZ

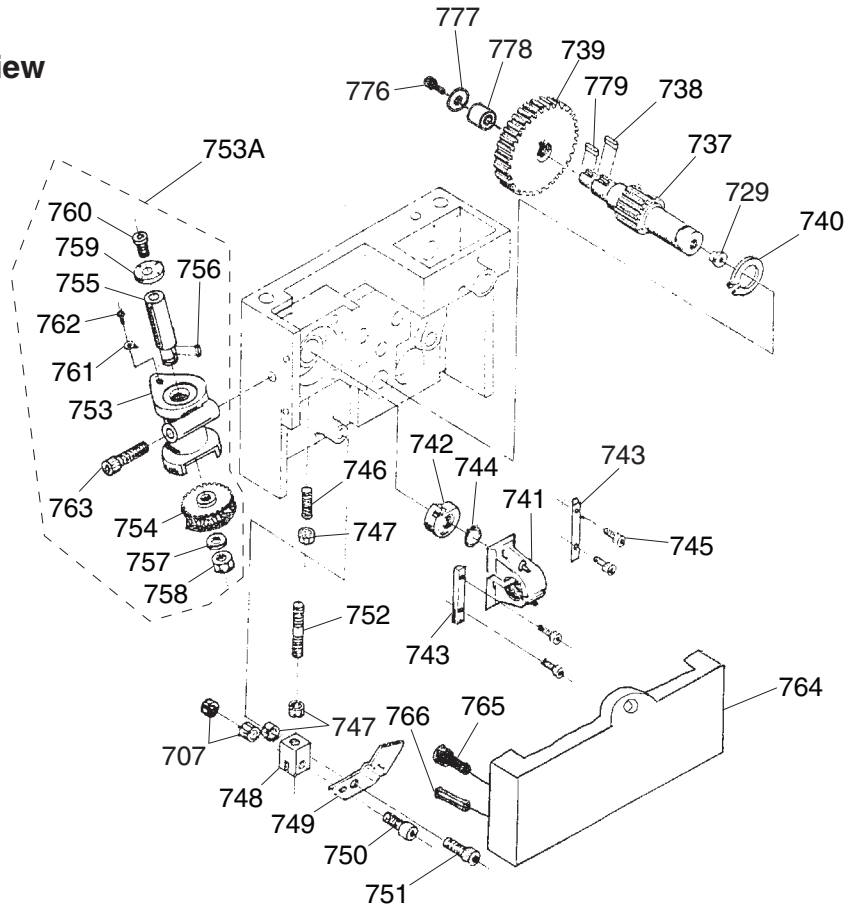
REF	PART #	DESCRIPTION
625	P4000625	PLUNGER
626	P4000626	COMPRESSION SPRING
627	P4000627	BUSHING
628	P4000628	KNURLED KNOB
629	P4000629	ACORN NUT M6-1
630	P4000630	GEARBOX FRONT COVER
631	P4000631	CAP SCREW M6-1 X 16
632	P4000632	ROLL PIN 4 X 22
633	P4000633	BRACKET
634	P4000634	CAP SCREW M6-1 X 10
635	P4000635	FLAT WASHER 10MM
636	P4000636	BUSHING
637	P4000637	ROLL PIN 4 X 14
638	P4000638	NUMBER PLATE
639	P4000639	COPPER FLUTED RIVET 2 X 5MM
640	P4000640	CAP SCREW M8-1.25 X 20
641	P4000641	LOCK WASHER 8MM
642	P4000642	OIL CUP
643	P4000643	BEARING CAP
644	P4000644	HEX NUT M6-1
645	P4000645	SET SCREW M4-.7 X 16
646	P4000646	TAP-IN BALL OILER 6MM
647	P4000647	ROLL PIN 4 X 12

Apron Breakdown

Front View



Rear View

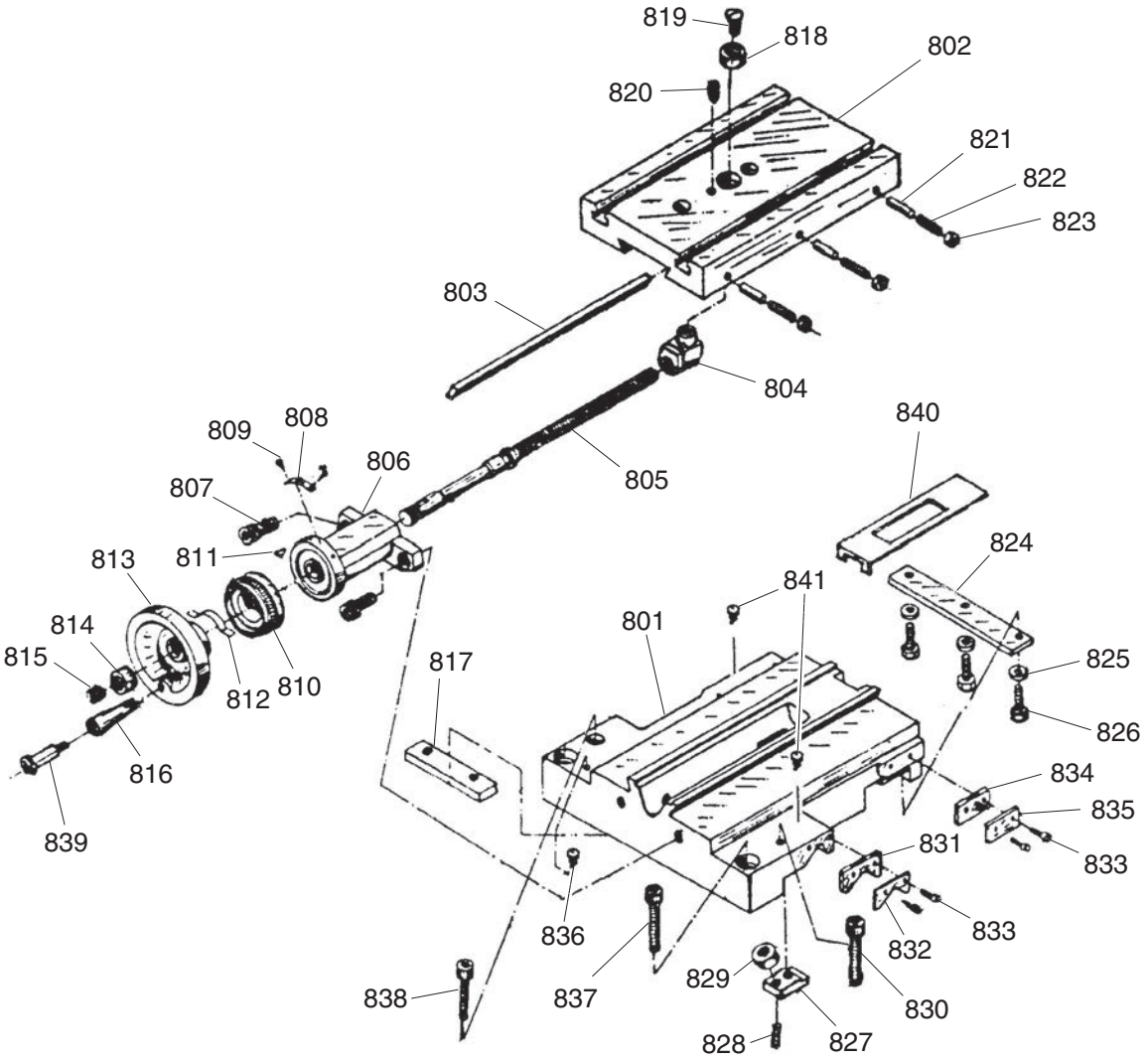


Apron Parts List

REF	PART #	DESCRIPTION
701	P4000701	APRON CASTING
703	P4000703	WORM GEAR
704	P4000704	KEY 3 X 3 X 25
707	P4000707	HEX NUT M4-.7
708	P4000708	SET SCREW M4-.7 X 12
709	P4000709	STEEL BALL
710	P4000710	COMPRESSION SPRING
711	P4000711	HALF-NUT LEVER
712	P4000712	SET SCREW M6-1 X 6
713	P4000713	FLAT WASHER 6MM
714	P4000714	FLAT HD SCR M6-1 X 8
715	P4000715	GEAR SHAFT 12T
716	P4000716	ROLL PIN 4 X 32
717	P4000717	GEAR 43T
718	P4000718	FEED LEVER
719	P4000719	GEAR SHAFT 13T
720	P4000720	BRACKET
721	P4000721	COMPRESSION SPRING
722	P4000722	SET SCREW M4-.7 X 10
723	P4000723	CAP SCREW M6-1 X 30
724	P4000724	GEAR SHAFT 43T
725	P4000725	SHAFT
726	P4000726	KEY 4 X 4 X 10
727	P4000727	GEAR 41T
728	P4000728	EXT RETAINING RING 14MM
729	P4000729	OIL PORT 8MM
730	P4000730	GEAR SHAFT 17T
731	P4000731	HANDWHEEL
732	P4000732	ROLL PIN 4 X 24
733	P4000733	HANDLE SCREW
734	P4000734	HANDLE
735	P4000735	LEVER DIRECTION LABEL
737	P4000737	GEAR SHAFT 18T
738	P4000738	KEY 4 X 4 X 10
739	P4000739	GEAR 42T
740	P4000740	EXT RETAINING RING 12MM
741	P4000741	HALF NUT SAE 16TPI 2PC
742	P4000742	LOCKING CAM

REF	PART #	DESCRIPTION
743	P4000743	HALF-NUT GUIDE BAR
744	P4000744	EXT RETAINING RING 8MM
745	P4000745	CAP SCREW M4-.7 X 16
746	P4000746	SET SCREW M5-.8 X 25
747	P4000747	HEX NUT M5-.8
748	P4000748	CONTROL BLOCK
749	P4000749	JOINT PLATE
750	P4000750	CAP SCREW M4-.7 X 20
751	P4000751	CAP SCREW M5-.8 X 16
752	P4000752	THREADED STUD M5-.8
753	P4000753	THREAD DIAL BODY
753A	P4000753A	THREAD DIAL BODY ASSEMBLY
754	P4000754	WORM GEAR 64T
755	P4000755	SHAFT
756	P4000756	KEY 3 X 3 X 10
757	P4000757	LOCK WASHER 8MM
758	P4000758	HEX NUT M8-1.25
759	P4000759	THREAD DIAL
760	P4000760	THREAD DIAL SCREW
761	P4000761	POINTER
762	P4000762	COPPER FLUTED RIVET 2 X 4MM
763	P4000763	CAP SCREW M6-1 X 60
764	P4000764	APRON REAR COVER
765	P4000765	CAP SCREW M5-.8 X 12
766	P4000766	ROLL PIN 3 X 16
767	P4000767	HANDWHEEL FLAT WASHER
768	P4000768	HANDWHEEL CAP SCREW
769	P4000769	PLATE
770	P4000770	COPPER FLUTED RIVET 2 X 5MM
771	P4000771	INDEX PLATE
772	P4000772	GRADUATED DIAL
776	P4000776	CAP SCREW M5-.8 X 10
777	P4000777	FLAT WASHER 5MM
778	P4000778	BUSHING
779	P4000779	KEY 3 X 3 X 8
780	P4000780	THREADED BALL OILER 6MM
781	P4000781	BALL OILER SET SCREW
782	P4000782	BALL OILER THIN HEX NUT

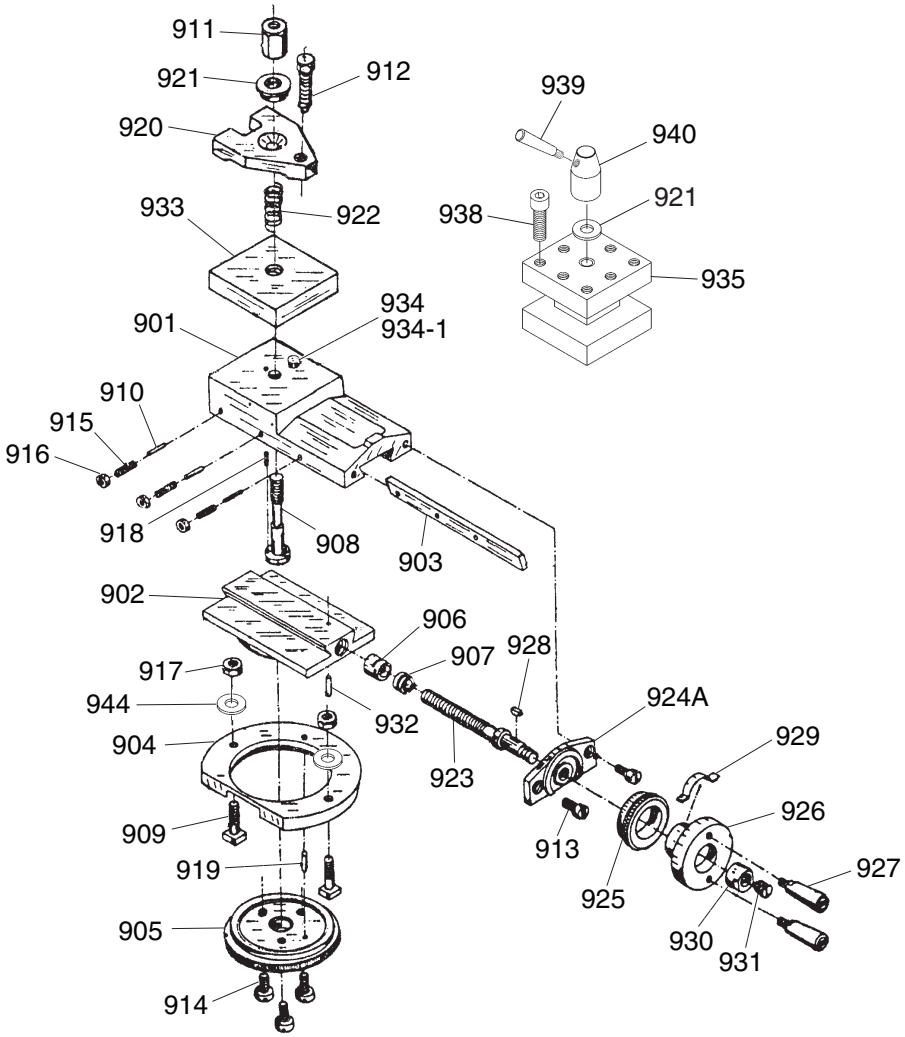
Saddle & Cross Slide



REF	PART #	DESCRIPTION
801	P4000801	SADDLE
802	P4000802	CROSS SLIDE
803	P4000803	CROSS SLIDE GIB
804	P4000804	CROSS SLIDE LEADSCREW NUT
805	P4000805	CROSS SLIDE LEADSCREW
806	P4000806	BRACKET
807	P4000807	CAP SCREW M5-.8 X 16
808	P4000808	INDEX PLATE
809	P4000809	COPPER FLUTED RIVET 2 X 4MM
810	P4000810	GRADUATED DIAL
811	P4000811	WOODRUFF KEY
812	P4000812	SPRING PLATE
813	P4000813	HANDWHEEL
814	P4000814	SPECIAL HEX NUT
815	P4000815	SET SCREW M8-1.25 X 6
816	P4000816	HANDLE
817	P4000817	SLIDE BLOCK
818	P4000818	BUSHING
819	P4000819	FLAT HD SCR M6-1 X 12
820	P4000820	SET SCREW M6-1 X 12
821	P4000821	GIB PIN

REF	PART #	DESCRIPTION
822	P4000822	SET SCREW M4-.7 X 12
823	P4000823	HEX NUT M4-.7
824	P4000824	SADDLE GIB CLAMP
825	P4000825	FLAT WASHER 6MM
826	P4000826	CAP SCREW M6-1 X 16
827	P4000827	CLIP
828	P4000828	SET SCREW M6-1 X 20
829	P4000829	HEX NUT M6-1
830	P4000830	CAP SCREW M6-1 X 25
831	P4000831	FRONT WAY WIPER
832	P4000832	FRONT WIPER CLAMP
833	P4000833	PHLP HD SCR M4-.7 X 6
834	P4000834	REAR WAY WIPER
835	P4000835	REAR WIPER CLAMP
836	P4000836	OIL PORT 6MM
837	P4000837	CAP SCREW M8-1.25 X 30
838	P4000838	CAP SCREW M6-1 X 25
839	P4000839	HANDLE SCREW
840	P4000840	CHIP GUARD
841	P4000841	TAP-IN BALL OILER 6MM

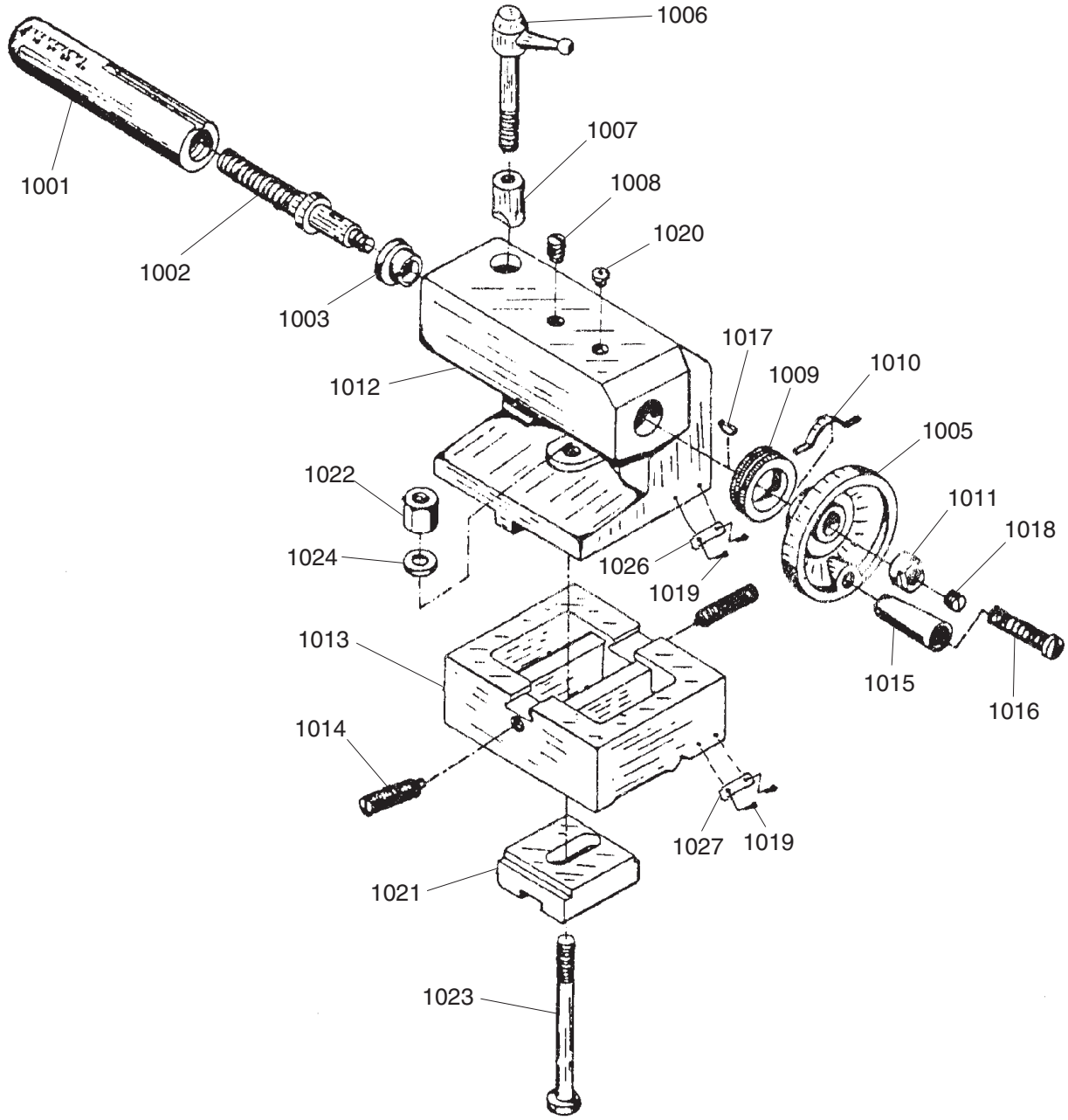
Compound Slide



REF	PART #	DESCRIPTION
901	P4000901	COMPOUND SLIDE
902	P4000902	SWIVEL BASE
903	P4000903	COMPOUND SLIDE GIB
904	P4000904	CLAMPING RING
905	P4000905	GRADUATED DIAL
906	P4000906	COMPOUND LEADSCREW NUT
907	P4000907	ADJUSTING SCREW
908	P4000908	TOOL POST STUD
909	P4000909	CLAMPING RING T-BOLT
910	P4000910	GIB PIN
911	P4000911	TOOL POST NUT
912	P4000912	HEX BOLT M8-1.25 X 30
913	P4000913	CAP SCREW M5-.8 X 10
914	P4000914	FLAT HD SCR M6-1 X 12
915	P4000915	SET SCREW M4-.7 X 10
916	P4000916	HEX NUT M4-.7
917	P4000917	HEX NUT M6-1
918	P4000918	ROLL PIN 3 X 8
919	P4000919	ROLL PIN 3 X 14
920	P4000920	C-STYLE TOOL CLAMP

REF	PART #	DESCRIPTION
921	P4000921	FLAT WASHER 8MM
922	P4000922	COMPRESSION SPRING
923	P4000923	COMPOUND SLIDE LEADSCREW
924A	P4000924A	LEADSCREW MOUNT V2.02.07
925	P4000925	GRADUATED DIAL
926	P4000926	HANDWHEEL
927	P4000927	HANDLE
928	P4000928	KEY 3 X 13
929	P4000929	DIAL POINTER
930	P4000930	THREADED COLLAR
931	P4000931	SET SCREW M8-1.25 X 6
932	P4000932	ROLL PIN 3 X 12
933	P4000933	C-STYLE TOOL BASE
934	P4000934	TOOL POST PIN
934-1	P4000934-1	PIN SPRING
935	P4000935	4-WAY TOOL POST
938	P4000938	CAP SCREW M8-1.25 X 30
939	P4000939	LOCK HANDLE
940	P4000940	TOOL POST LOCK NUT
944	P4000944	FLAT WASHER 6MM

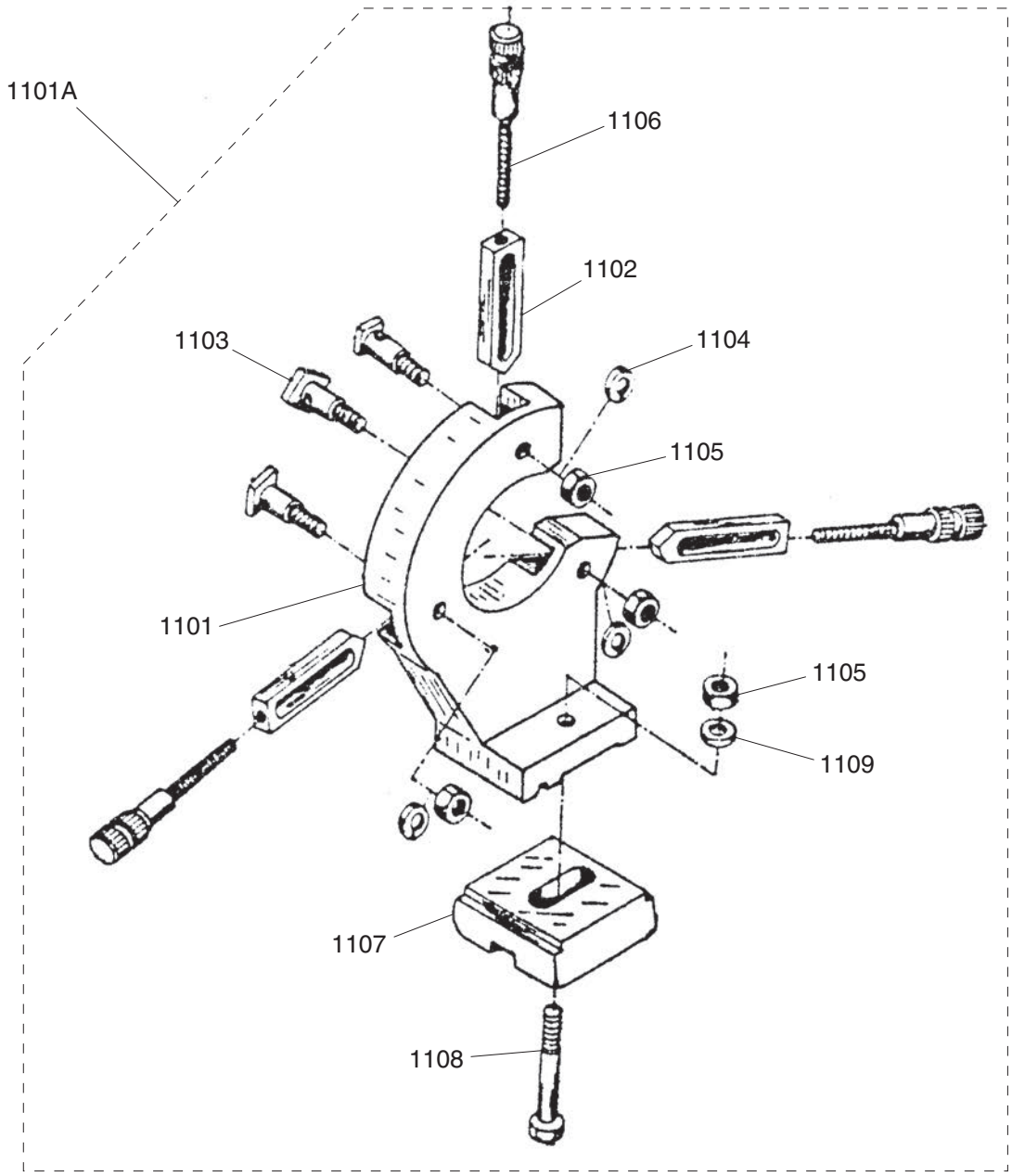
Tailstock



REF	PART #	DESCRIPTION
1001	P40001001	TAILSTOCK QUILL
1002	P40001002	TAILSTOCK LEADSCREW
1003	P40001003	BUSHING
1005	P40001005	HANDWHEEL
1006	P40001006	QUILL LOCK LEVER
1007	P40001007	CLAMP
1008	P40001008	SET SCREW M5-.8 X 10
1009	P40001009	GRADUATED DIAL
1010	P40001010	POINTER PLATE
1011	P40001011	HANDWHEEL NUT M8-1.25
1012	P40001012	TAILSTOCK BODY
1013	P40001013	TAILSTOCK BASE
1014	P40001014	SET SCREW M8-1.25 X 25

REF	PART #	DESCRIPTION
1015	P40001015	HANDLE
1016	P40001016	HANDLE SCREW
1017	P40001017	KEY 3 X 13
1018	P40001018	SET SCREW M8-1.25 X 8
1019	P40001019	COPPER FLUTED RIVET 2 X 5MM
1020	P40001020	OIL PORT 6MM
1021	P40001021	CLAMPING PLATE
1022	P40001022	HEX NUT M8-1.25
1023	P40001023	TAILSTOCK CLAMP BOLT
1024	P40001024	FLAT WASHER 8MM
1026	P40001026	UPPER OFFSET PLATE V2.03.09
1027	P40001027	LOWER OFFSET PLATE V2.03.09

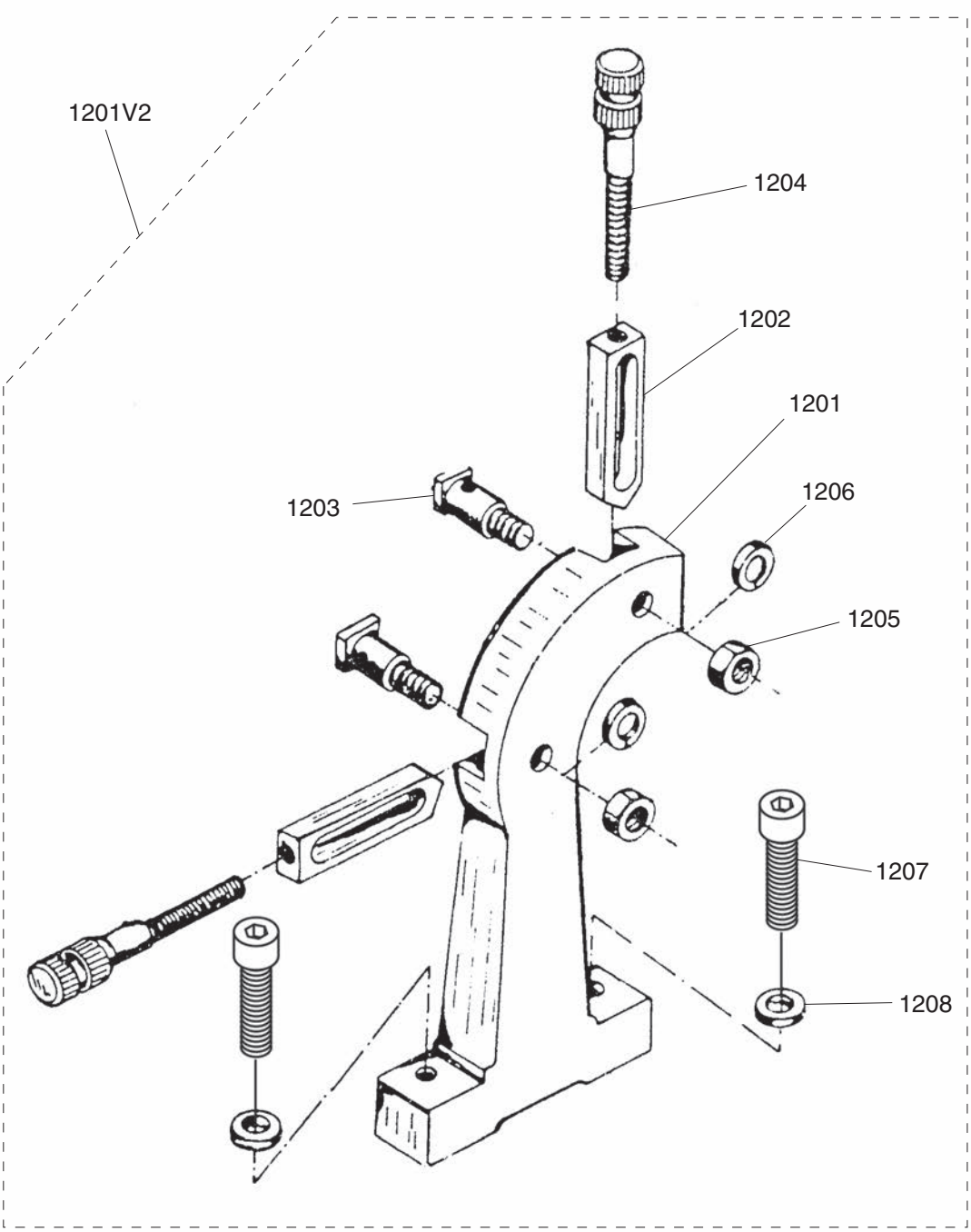
Steady Rest



REF	PART #	DESCRIPTION
1101	P40001101	STEADY REST CASTING
1101A	P40001101A	STEADY REST ASSEMBLY
1102	P40001102	STEADY REST FINGERS 3 PC
1103	P40001103	SPECIAL SCREW
1104	P40001104	LOCK WASHER 8MM

REF	PART #	DESCRIPTION
1105	P40001105	HEX NUT M8-1.25
1106	P40001106	ADJUSTING SCREW
1107	P40001107	CLAMPING PLATE
1108	P40001108	HEX BOLT M8-1.25 X 60
1109	P40001109	FLAT WASHER 8MM

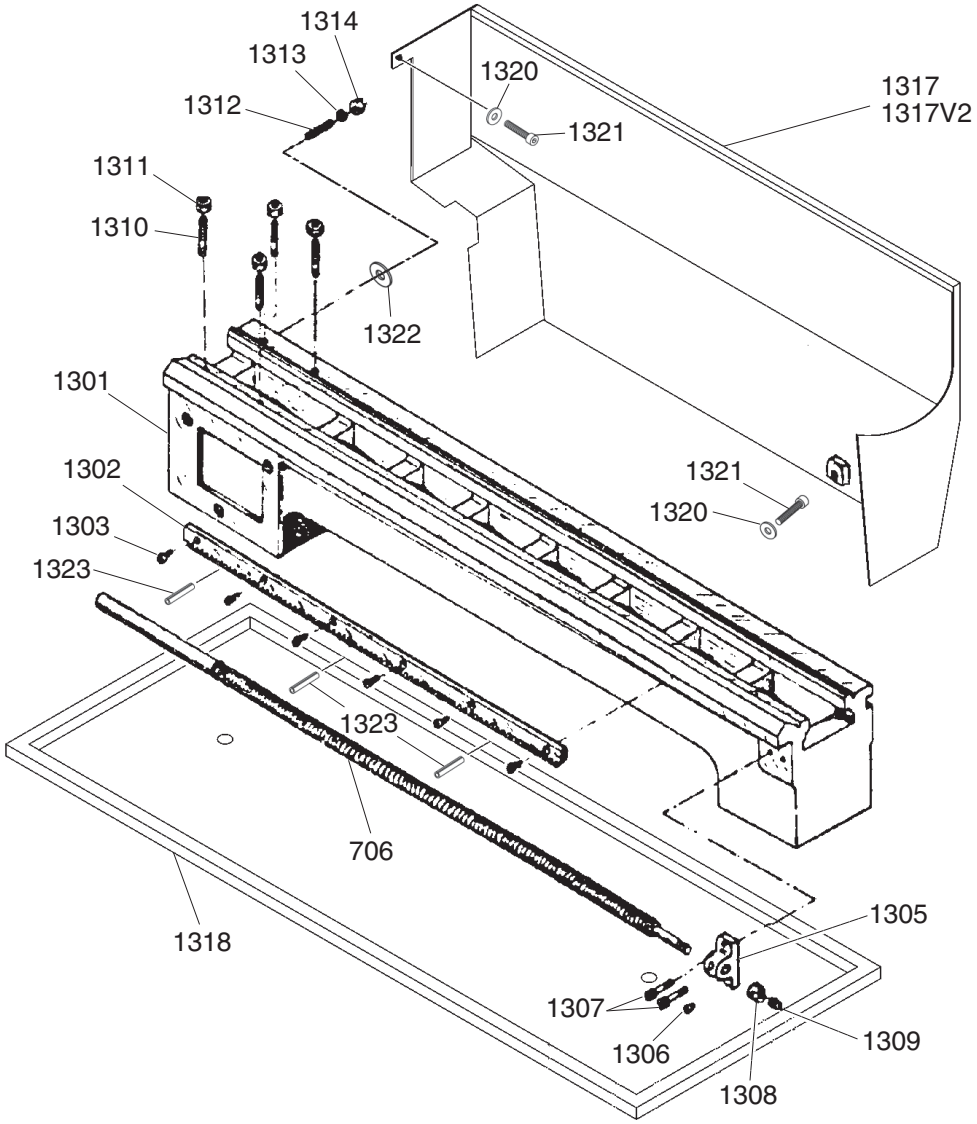
Follow Rest



REF	PART #	DESCRIPTION
1201	P40001201	FOLLOW REST CASTING
1201V2	P40001201V2	FOLLOW REST ASSEMBLY V2.01.09
1202	P40001202	FOLLOW REST FINGER 2PC SET
1203	P40001203	SPECIAL SCREW
1204	P40001204	ADJUSTING SCREW

REF	PART #	DESCRIPTION
1205	P40001205	HEX NUT M8-1.25
1206	P40001206	FLAT WASHER 8MM
1207	P40001207	CAP SCREW M6-1 X 30
1208	P40001208	FLAT WASHER 6MM

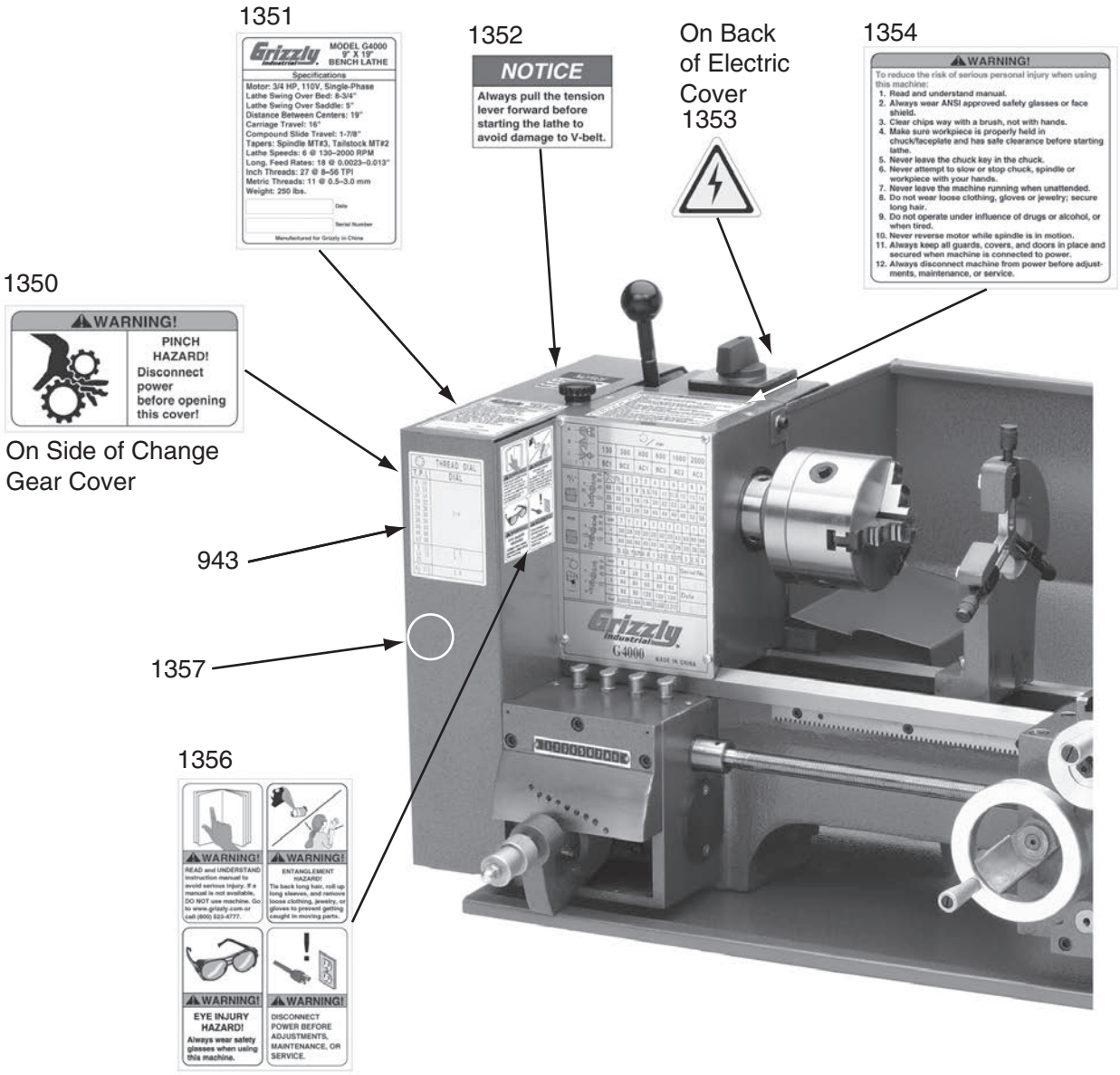
Bed



REF	PART #	DESCRIPTION
706	P4000706	LEADSCREW 9/16-16 x 25"
1301	P40001301	BED
1302	P40001302	RACK
1303	P40001303	CAP SCREW M4-.7 X 8
1305	P40001305	LEADSCREW BUSHING BLOCK
1306	P40001306	OIL PORT
1307	P40001307	CAP SCREW M6-1 X 20
1308	P40001308	HEX NUT M8-1.25
1309	P40001309	SET SCREW M8-1.25 X 6
1310	P40001310	THREADED STUD M8-1.25 X 28
1311	P40001311	HEX NUT M8-1.25

REF	PART #	DESCRIPTION
1312	P40001312	SET SCREW M6-1 X 25
1313	P40001313	FLAT WASHER 6MM
1314	P40001314	HEX NUT M6-1
1317	P40001317	CHIP SHIELD GREEN V1.06.97
1317V2	P40001317V2	CHIP SHIELD WHITE V2.01.08
1318	P40001318	CHIP PAN
1320	P40001320	FLAT WASHER 5MM
1321	P40001321	CAP SCREW M5-.8 X 10
1322	P40001322	FENDER WASHER 6MM
1323	P40001323	ROLL PIN 4 X 16

Label Placement


1351
MODEL G4000
9" X 19"
BENCH LATHE
Specifications
Motor: 3/4 HP, 110V, Single-Phase
Lathe Swing Over Bed: 8-3/4"
Lathe Swing Over Saddle: 5"
Distance Between Centers: 19"
Carriage Travel: 16"
Compound Slide Travel: 1-7/8"
Tapers: Spindle MT#3, Tailstock MT#2
Lathe Speeds: 6 @ 130–2000 RPM
Long. Feed Rates: 18 @ 0.0023–0.013"
Inch Threads: 27 @ 8–56 TPI
Metric Threads: 11 @ 0.5–3.0 mm
Weight: 250 lbs.
Date
Serial Number
Manufactured for Grizzly in China
1352
NOTICE
Always pull the tension lever forward before starting the lathe to avoid damage to V-belt.
On Back of Electric Cover
1353
1354
WARNING!
To reduce the risk of serious personal injury when using this machine:
1. Read and understand manual.
2. Always wear ANSI approved safety glasses or face shield.
3. Clear chips way with a brush, not with hands.
4. Make sure workpiece is properly held in chuck/faceplate and has safe clearance before starting lathe.
5. Never leave the chuck key in the chuck.
6. Never attempt to slow or stop chuck, spindle or workpiece with your hands.
7. Never leave the machine running when unattended.
8. Do not wear loose clothing, gloves or jewelry; secure long hair.
9. Do not operate under influence of drugs or alcohol, or when tired.
10. Never reverse motor while spindle is in motion.
11. Always keep all guards, covers, and doors in place and secured when machine is connected to power.
12. Always disconnect machine from power before adjustments, maintenance, or service.
1350
WARNING!
PINCH HAZARD!
Disconnect power before opening this cover!
On Side of Change Gear Cover
943
1357
1356
WARNING!
READ and UNDERSTAND instruction manual to avoid serious injury. If a manual is not available, DO NOT use machine. Go to www.grizzly.com or call (800) 523-4777.
WARNING!
ENTANGLEMENT HAZARD!
Tie back long hair, roll up long sleeves, and remove loose clothing, jewelry, or gloves to prevent getting caught in moving parts.
WARNING!
EYE INJURY HAZARD!
Always wear safety glasses when using this machine.
WARNING!
DISCONNECT POWER BEFORE ADJUSTMENTS, MAINTENANCE, OR SERVICE.

REF	PART #	DESCRIPTION
943	P4000943	THREAD DIAL CHART LABEL
1350	P40001350	PINCH HAZARD LABEL
1351	P40001351	MACHINE ID LABEL
1352	P40001352	TENSION LEVER NOTICE LABEL

REF	PART #	DESCRIPTION
1353	P40001353	ELECTRICITY LABEL
1354	P40001354	WARNINGS LABEL
1356	P40001356	GROUPED WARNINGS LABEL
1357	P40001357	GRIZZLY GREEN TOUCH-UP PAINT

⚠WARNING

Safety labels warn about machine hazards and ways to prevent injury. The owner of this machine MUST maintain the original location and readability of the labels on the machine. If any label is removed or becomes unreadable, REPLACE that label before using the machine again. Contact Grizzly at (800) 523-4777 or www.grizzly.com to order new labels.

Grizzly Industrial, Inc. WARRANTY CARD

Name _____

Street _____

City _____ State _____ Zip _____

Phone # _____ Email _____

Model # _____ Order # _____ Serial # _____

The following information is given on a voluntary basis. It will be used for marketing purposes to help us develop better products and services. ***Of course, all information is strictly confidential.***

1. How did you learn about us?

____ Advertisement ____ Friend ____ Catalog
____ Card Deck ____ Website ____ Other:

2. Which of the following magazines do you subscribe to?

____ Cabinetmaker & FDM
____ Family Handyman
____ Hand Loader
____ Handy
____ Home Shop Machinist
____ Journal of Light Cont.
____ Live Steam
____ Model Airplane News
____ Old House Journal
____ Popular Mechanics
____ Popular Science
____ Popular Woodworking
____ Precision Shooter
____ Projects in Metal
____ RC Modeler
____ Rifle
____ Shop Notes
____ Shotgun News
____ Today's Homeowner
____ Wood
____ Wooden Boat
____ Woodshop News
____ Woodsmith
____ Woodwork
____ Woodworker West
____ Woodworker's Journal
____ Other:

3. What is your annual household income?

____ $20,000-$29,000 ____ $30,000-$39,000 ____ $40,000-$49,000
____ $50,000-$59,000 ____ $60,000-$69,000 ____ $70,000+

4. What is your age group?

____ 20-29 ____ 30-39 ____ 40-49
____ 50-59 ____ 60-69 ____ 70+

5. How long have you been a woodworker/metalworker?

____ 0-2 Years ____ 2-8 Years ____ 8-20 Years ____ 20+ Years

6. How many of your machines or tools are Grizzly?

____ 0-2 ____ 3-5 ____ 6-9 ____ 10+

7. Do you think your machine represents a good value? _____Yes _____No

8. Would you recommend Grizzly Industrial to a friend? _____Yes _____No

9. Would you allow us to use your name as a reference for Grizzly customers in your area?
Note: *We never use names more than 3 times.* _____Yes _____No

10. Comments: _____

_____

_____

_____

CUT ALONG DOTTED LINE

FOLD ALONG DOTTED LINE

Place
Stamp
Here

GRIZZLY INDUSTRIAL, INC.
P.O. BOX 2069
BELLINGHAM, WA 98227-2069

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Send a Grizzly Catalog to a friend:

Name_____

Street_____

City_____State_____Zip_____

TAPE ALONG EDGES--PLEASE DO NOT STAPLE

WARRANTY AND RETURNS

Grizzly Industrial, Inc. warrants every product it sells for a period of **1 year** to the original purchaser from the date of purchase. This warranty does not apply to defects due directly or indirectly to misuse, abuse, negligence, accidents, repairs or alterations or lack of maintenance. This is Grizzly's sole written warranty and any and all warranties that may be implied by law, including any merchantability or fitness, for any particular purpose, are hereby limited to the duration of this written warranty. We do not warrant or represent that the merchandise complies with the provisions of any law or acts unless the manufacturer so warrants. In no event shall Grizzly's liability under this warranty exceed the purchase price paid for the product and any legal actions brought against Grizzly shall be tried in the State of Washington, County of Whatcom.

We shall in no event be liable for death, injuries to persons or property or for incidental, contingent, special, or consequential damages arising from the use of our products.

To take advantage of this warranty, contact us by mail or phone and give us all the details. We will then issue you a "Return Number,'' which must be clearly posted on the outside as well as the inside of the carton. We will not accept any item back without this number. Proof of purchase must accompany the merchandise.

The manufacturers reserve the right to change specifications at any time because they constantly strive to achieve better quality equipment. We make every effort to ensure that our products meet high quality and durability standards and we hope you never need to use this warranty.

Please feel free to write or call us if you have any questions about the machine or the manual.

Thank you again for your business and continued support. We hope to serve you again soon.

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